

DISTRIBUTION PAGE

OCTOBER, 1945

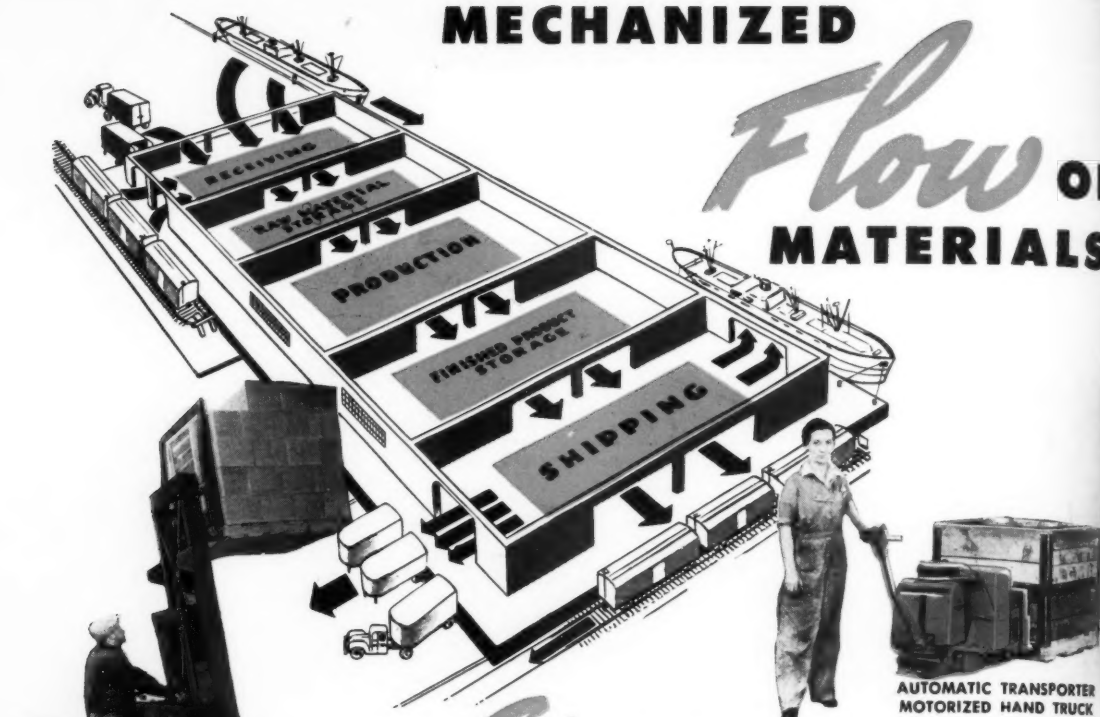
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The Magazine that Integrates all Phases of Distribution

MECHANIZED

Flow OF MATERIALS



AUTOMATIC FORK TRUCK

At Your Service

AUTOMATIC has 100 Materials Handling Engineers in the field. There's one near your plant. He is ready to help you analyze your operations from receipt of raw materials through each successive handling procedure to storage and final shipment.

Please write us now so we may schedule your plant for the next AUTOMATIC Engineered Materials Handling survey in your area.

Gives you **LOWER UNIT COSTS...**

Management is now compelled by competition to utilize men, methods, materials and machines in a manner to achieve lowest production cost and sales price per unit.

While processing motions usually add value to a product, handling motions add only to its cost.

You can lower your unit costs if you will team up AUTOMATIC's battery-powered Fork Truck with the war-tested "TRANSPORTER," AUTOMATIC's service-proved, motorized hand truck,—and apply AUTOMATIC's Engineered Materials Handling Methods.

AUTOMATIC's completely Engineered Materials Handling Service will do these things for you:

1. Eliminate costly manual handling.
2. Reduce damage to materials handled.
3. Increase storage capacity by safe, vertical stacking of materials to rooftop.
4. Simplify inventory control.
5. Increase productivity by reducing labor fatigue.
6. Reduce accidents.

Please write us now so we may schedule your plant for the next AUTOMATIC Engineered Materials Handling survey in your area.

MANUFACTURERS OF *Electric* INDUSTRIAL TRUCKS SINCE 1906

AUTOMATIC TRANSPORTATION COMPANY

Division of the Yale & Towne Manufacturing Company

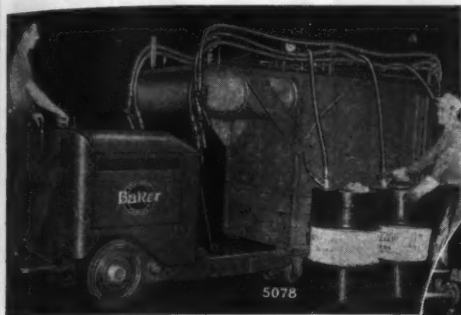
ITS West 87th Street

Chicago 20, Ill. U.S.A.

Specialists in developing **ENGINEERED MATERIALS HANDLING TO LOWER UNIT COSTS**

ARE **BAKER TRUCKS** MAKING SAVINGS FOR YOUR COMPETITORS—THAT YOU ARE MISSING?

In the days of keen competition just ahead, are you prepared with the most efficient, cost-reducing material handling equipment? Look over these actual case histories. There are many more of them. In fact, every Baker truck sold quickly pays for itself out of savings.



A large aircraft producer saves time by delivering cutting oils to machines with this mobile "service station" on a Baker Truck.



A printer and publisher saves thousands of dollars annually in warehouse rentals by tiering stock with a Baker Truck.



A stove manufacturer reduced handling costs from 35¢ to 4¢ per ton on a single operation. Overall costs were reduced 75%.



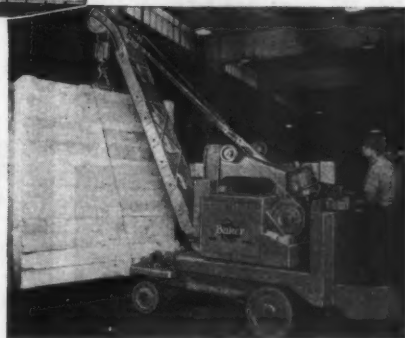
A stevedoring company moves 18 crated motor cars per hour from lighter to pier bulkhead—saves 20% on handling costs.

Carloading costs for one plant were reduced 25¢ per ton or \$12.50 per car, releasing 7 men for other jobs.

This Baker Articulated Sheet Handler loads 200 tons of large sheets per hour and saves a steel mill \$4.30 per ton.

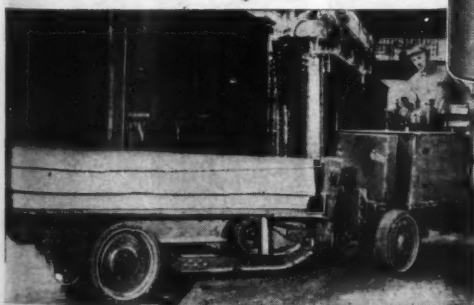


A company saves \$7,956.00 per year on handling costs in one of its warehouses with a system using a Baker Truck.



The Baker Material Handling Engineer can show you how similar savings may apply to your plant. Phone our nearest agent—or write us direct.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
2176 WEST 25TH STREET • CLEVELAND, OHIO
In Canada: Railway and Power Engineering Corporation, Ltd.



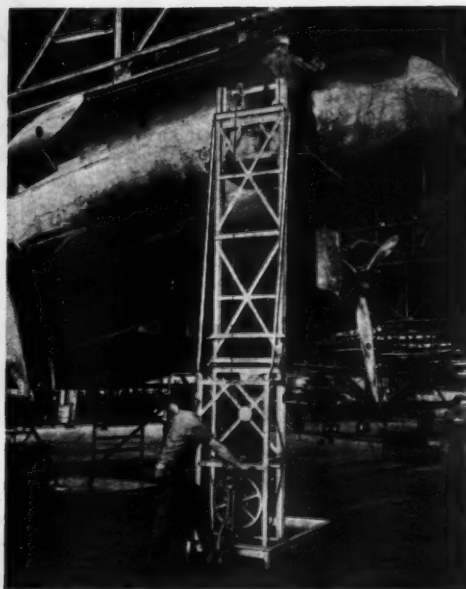
Baker INDUSTRIAL TRUCKS

ECONOMY LIFTERS

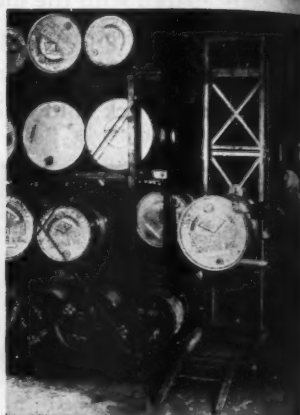
speed material handling



Stacking Cotton



Servicing Aircraft



Drum Storage



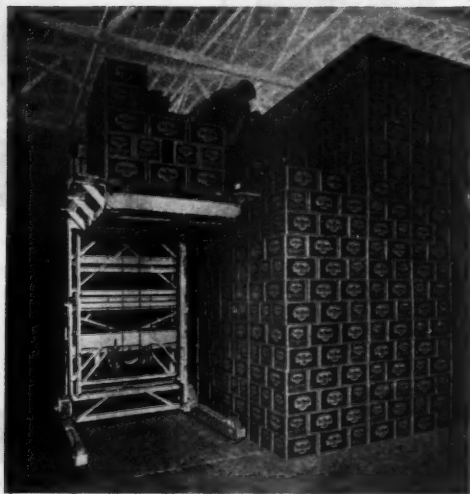
Loading Trucks



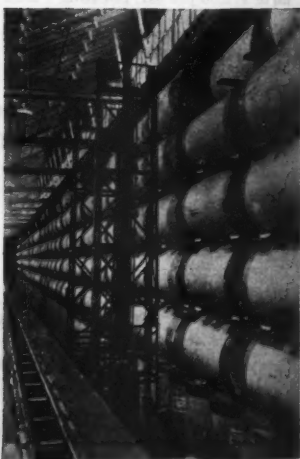
Racking Hogheads



Drum Tilter



Warehousing Cartons



Stacking Newsprint

**ECONOMY
ENGINEERING
COMPANY**

2661 W. Van Buren St.
Chicago, Illinois



THIS MONTH'S COVER: Motaircargo is a reality. Winged cargo ships and road-bound motor carriers meet daily at airports throughout the world ... The sky and the road have met.

OCTOBER, 1945

VOL. 44, NO. 10

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GEORGE POST
Assistant Manager

o o o

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**The Magazine that Integrates
All Phases of Distribution**

THE publication in which shipper, carrier, receiver, warehouseman and equipment manufacturer meet on common ground to obtain and exchange ideas and suggestions for more efficient and economical distribution of raw materials and finished products.

Distribution Age is a clearing house of information for all who are interested in distribution of anything, anywhere from points of origin and production to points of ultimate use and consumption whether sectional, national or international.

Distribution Age takes the position that more efficient and economical distribution is the present major problem of modern business.

SAFE!



PERISHABLE FOODS of every description... meats, fresh fruits, vegetables, dairy-products... are surrounded by every safeguard when entrusted to Harborside cold-storage.

As you would expect at one of the world's greatest refrigerating warehouses, personnel are trained for the safe, swift, and efficient handling of perishable merchandise. These products are stored under ideal temperature-conditions... the correct degree of chilled protection... cooling, freezing, or sharp-freezing. Likewise, proper ventilation and humidity controls are maintained at all times.



PHOTO BY FAIRCHILD
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Harborside's vast storage-capacity, including its 3,000,000 cu. ft. of cold storage space, is gradually being made available for the uses of peace-time commerce. We welcome your inquiries on current availabilities.

Pennsylvania Railroad siding, direct connection with all other lines, via lighterage. 16-car placement. 8 minutes to Holland Tunnel and trunk highways. Low insurance rates. Storage-in-transit privileges.

HARBORSIDE

WAREHOUSE COMPANY, INC.

34 EXCHANGE PLACE, JERSEY CITY 3, N. J.



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COMPANY IS
KNOWN BY
THE CUSTOMERS
IT 'Keeps'"



"SINCE 1925—OUR TRAILERS HAVE BEEN 100% FRUEHAUFS!"

Say LEONARD BROTHERS VAN and STORAGE Co., Detroit

THEY'VE PROVEN their value over and over again—from the first solid-tire Trailer to the newest Warehouseman's Van in our fleet. In city moving and heavy going across the nation alike, we depend upon our Fruehaufs to get the loads there safely."

HAULING TIME REDUCED

"Today, with more than 60% of our business long-distance moving, our Trailers are constantly on the road. One loaded Van left yesterday for Oakland, California. There it will unload and pick up furniture consigned to Miami, Florida. In Miami, it will load with household

goods for New York. From that city it will return with a different load. That's just one example of how good roads and Fruehauf Trailers have translated hauling time for us from weeks into days", says Roy R. Leonard.

NATION-WIDE SERVICE

"But most important to us is the fact that in Boston, Chicago, Los Angeles or any other part of the country we can pull into a nearby Fruehauf Factory - Branch Service Station, should trouble hit. We get good service—no delays or waiting for parts—and that means better service to our customers.



Roy R. Leonard, Mgr., Leonard Bros., Detroit, dispatching driver Thomas Toth on a 2450 mile haul to Portland, Oregon.

"We've been 100% Fruehauf since we adopted the Trailer-method of 20 years ago—and we'll continue to add new Fruehaufs to our hauling fleet."

★ ★ ★

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER CO.

Detroit 32

Service in Principal Cities

THIS STORY IS AMERICA—
WHERE YOU ARE FREE TO GET AHEAD.
LET'S KEEP IT THAT WAY!



FRUEHAUF TRAILERS

"ENGINEERED
TRANSPORTATION"

SOME ADVANCED IDEAS ON W

... ON YOUR OWN PREMISES

... ANYWHERE !

It's far ahead in the whirling world of today . . . the "Tidewater Method" of Field Warehousing.

Here you have a plan which "brings the warehouse to the goods" . . . a plan which overcomes today's storage problems, and also eases the special financing difficulties of the times.

You will find exceedingly helpful the "Tidewater Method" of furnishing you with warehouse receipts for inventories of raw materials or finished goods against which you can borrow—from *your local bank*—usually at low, secured loan rates. No expensive shipping, storage, or handling costs.

Storage, bonding, custodianship, withdrawals, records . . . everything is covered in the new "Tidewater Method."

Wouldn't you like to hear the whole story of this advanced method of Field Warehousing? Just drop us a postcard or letter—TODAY!

TIDEWATER FIELD WAREHOUSES, INC.

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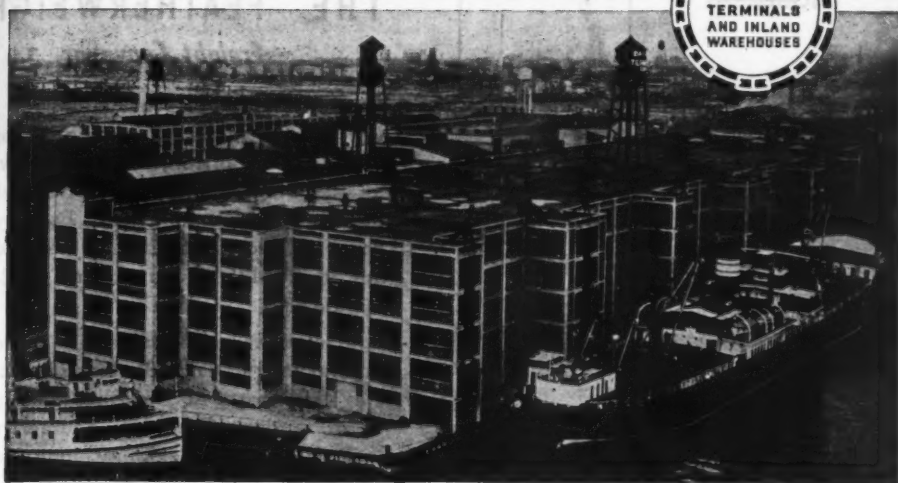
131 BEVERLY STREET, BOSTON 14

1367 BROAD ST. STA. BLDG., PHILA. 3, PA.



NEWARK T
BAYWAY T
TIDEWATER F

WAREHOUSING



AT BAYWAY (*Elizabeth, N. J.*)

Here, 30 minutes from Manhattan, are 1,070,000 square feet of storage and manufacturing space, protected loading platforms for truck and railway, deep-water and inland-waterway docks, railroad and lighterage service. Here are live steam for manufacturing, the finest of loading and storage equipment, 100% sprinkler protection, low-cost insurance, one of the world's

outstanding fumigation plants, and a host of other facilities.

In spite of government demands and unprecedented shortages of warehousing and terminal space, we are making every effort to meet your requirements, and will be delighted to discuss with you just what is available.

BAYWAY TERMINAL CORPORATION

R. S. McELROY, V. P. & G. M.

ELIZABETH, N. J., OR 17 STATE ST., NEW YORK 4

(Operated by Lincoln Tidewater Terminals)



AT PORT NEWARK (*Port of New York*)

Our exceptional accommodations for low-cost and speedy handling, shipping, and storage; our specially trained personnel; and our magnificent industrial record for service—are temporarily unavailable to customers. For all our facilities, all our space, all our management and all our employees are concentrated chiefly on war work.

We realize that victory comes first, and that

storage, warehousing and deep sea equipment are one of the nation's biggest and most overburdened problems. We are glad to report that we are handling the largest volume in our career with the greatest efficiency in our history.

It is our sincere hope that our exceptional facilities and our even greater efficiency will soon again be available to the friends and clients whose business has made us so useful to the Nation.

NEWARK TIDEWATER TERMINAL, INC.

J. A. LEHMAN, V. P. & G. M.

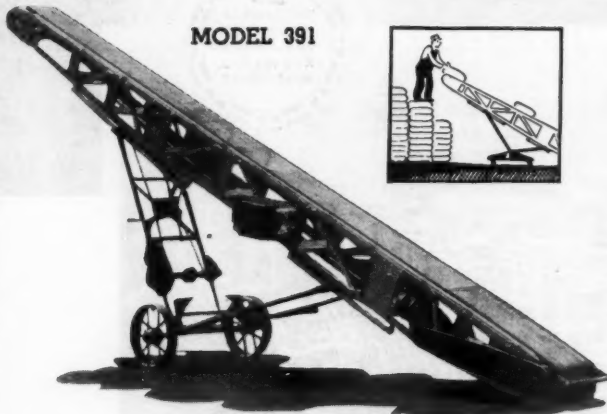
PORT ST., NEWARK 5, N. J., OR 17 STATE ST., NEW YORK 4

TIDEWATER TERMINAL, INC.
TERMINAL CORPORATION
(LINCOLN TIDEWATER TERMINALS, MGRS.) ARTHUR LINK, V. P.
FIELD WAREHOUSES, INC.
 17 STATE STREET, NEW YORK

SAVE MANPOWER... SPEED HANDLING...

WITH

THE "FEATHERWEIGHT" Freight Conveyor

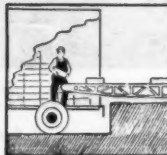
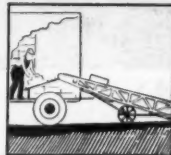
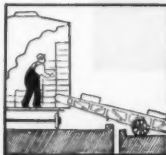


MODEL 391



Featherweight Freight Handling Conveyors are made in standard portable elevating or horizontal models as well as for stationary installation. Five styles of mounting for handling bags, boxes, cases, hampers, crates and similar items weighing up to 125 lbs. at a rate of 25 per minute.

Four standard sizes all easily moved by one man: 14', 17', 20' and 23' long. To elevate or carry horizontally; to use singly or in tandem. Farquhar Featherweights lead the field in flexibility, long life and low cost operation.



WRITE FOR BULLETIN 391 for complete details on all styles and sizes of Portable Featherweight Conveyors.

PORTA

Heavy Duty

FREIGHT CONVEYOR

The Farquhar Standard Heavy Duty Freight Conveyor is recommended for handling items weighing up to 500 lbs. each—likewise made in portable elevating or horizontal models as well as for stationary installations.

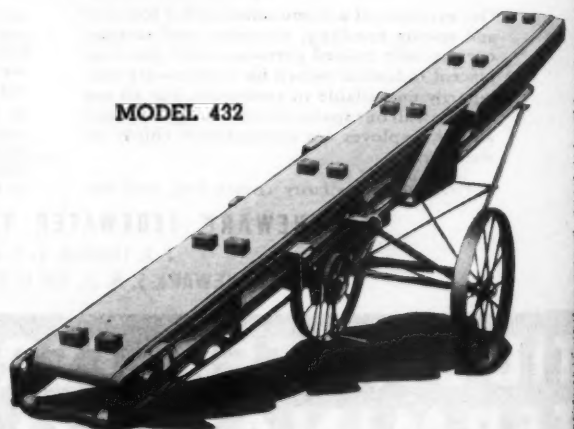
Backed by an organization of portable conveyor experts, these modern freight handling conveyors will save you time, money and manpower wherever goods must be moved.

A. B. FARQUHAR COMPANY

203 DUKE STREET

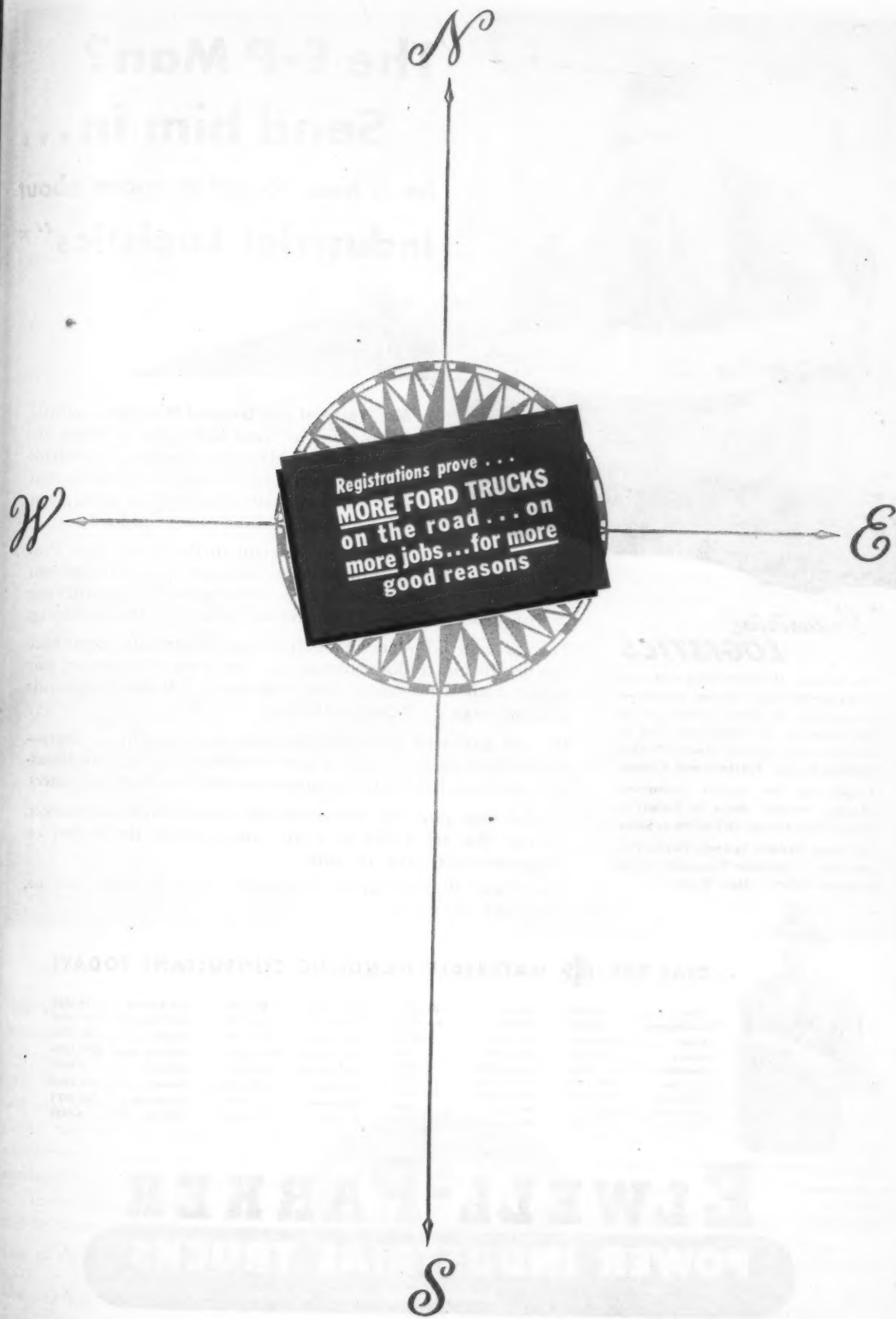
YORK, PENNSYLVANIA

FACTORY TRAINED REPRESENTATIVES
IN ALL PRINCIPAL CITIES



MODEL 432

WRITE FOR BULLETIN 432 for complete details on Heavy Duty Freight Conveyors.





"The E-P Man? Send him in..."

he is here to tell us more about
Industrial Logistics"★

Mr. President and General Manager:—tell the receptionist to "send him right in" when the Elwell-Parker Materials-Handling Consultant calls. Industrial Logistics is an executive concern—a new, challenging way to think about the handling of all of your plant loads.

Bring your Director of Purchases, your Production Manager and your Sales Manager into the meeting—because Industrial Logistics ties

in with Procurement and Distribution, as well as Manufacturing.

Then give the E-P Man the job that years of successful experience best qualify him to do: searching out new ways to "transport *your* bigger loads faster—more safely—for less—in Master Unit Loads at every stage on Pallets or Skids."

He will start with raw materials from your Suppliers' plants—follow through every step of your manufacturing and warehousing—finish with deliveries to customers and customers' customers.

Total savings probably will amaze you—will expand your market. Savings that are going to waste now—putting the brakes on progress—benefitting no one.

The Elwell-Parker Electric Company, 4110 St. Clair Avenue, Cleveland 14, Ohio.

★ *Industrial* **LOGISTICS**

The science of assembling and handling materials to insure maximum economies at every stage of (a) Procurement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes; Employing the correct containers (Boxes, Barrels, Bags or Bales) in Master Unit Loads, on Pallets or Skids; To insure Greater Speed—Faster Production — Greater Turnover — Increased Safety—New Profits.



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Electric Co.

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POWER INDUSTRIAL TRUCKS

Established 1893



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One of the first White Trucks was

the first motorized moving van and during all the years since, White has pioneered advances which have gone a long way to make possible the perfected transportation service provided by the modern moving and storage industry. Today, White Super Power trucks enjoy marked preference among leaders in the field.



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Cleveland, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA, LIMITED
Factory at Montreal

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

Solves a manpower Problem!!!

LOAD AND UNLOAD YOUR TRUCKS WITH—

ANTHONY LIFT GATE HYDRAULIC



READ WHAT USERS SAY

"It is a necessary addition to our equipment" C E W

"Ordering two more next week" R R O

"Now operating 14" U P R R

"We would be glad to recommend the Anthony 'LIFTGATE' to anyone" B X I & M CO

"This 'LIFTGATE' is working out in a very satisfactory manner, and in fact far exceeds our expectations. Before, our driver could not unload the truck unaided—now he handles unloading without assistance" C R L CO

"It has performed flawlessly" H F L

"Our damage claims have been practically nil" M F R

"We would recommend the installation of such equipment on all trucks where loads of 150 lbs or over are handled" B C

"We have just put our third one into service" M H CO

"We thought we only had a limited use for one, now we've found so many uses we couldn't do without it" A C C

(Statements on file)

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✓ SAVES MANPOWER—the powerful hydraulic lift enables one man to load or unload trucks. One man now does the work of three.

✓ CUTS LOADING AND UNLOADING TIME—absence of chains permits "LIFTGATE" to be loaded from all sides. Stops automatically at body floor and ground level.

✓ REDUCES PERSONNEL ACCIDENTS—Cylinder and valve, in one unit, directly connected to "LIFTGATE"—no pins or cables to break. Control levers located for safest operation.

✓ LESSENS MERCHANDISE DAMAGE—Automatic valve prevents over-loading. Adjustable stop on control valve regulates maximum lowering speed to prevent accidental dropping of load. "LIFTGATE" cannot lower while truck is in motion.

✓ EASILY INSTALLED—on trucks now in service or on new trucks without extensive alteration to the truck body or mechanism.

✓ "PERFORMANCE PROVED"—in hundreds of installations all over the world.

OLD WAY



NEW WAY



ANTHONY COMPANY, INC.

MANUFACTURERS OF HYDRAULIC HOISTS & BODIES & TRUCK EQUIPMENT

STREATOR



ILLINOIS

**GO MORE PLACES!
DO MORE
JOBS!**



**U. S. ROYAL
INDUSTRIAL PNEUMATIC**
Protects loads with maximum traction and long, even wear on power trucks, trailers and scooters.

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Provides easy handling and fast movement over soft or rough going.

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PNEUMATIC CASTER**
Supplies greatest ease of movement and protection of load on floor trucks, trailers, and dollies.

U. S. ROYAL INDUSTRIAL PNEUMATICS

U.S.

Load-rated

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TIRES**

From the complete U. S. Industrial Tire line you can select the right tire for every job, load-rated to do the job right. Every tire is engineered for long, even wear, easier rolling, and power-saving service.

When ordering new industrial equipment, specify U. S. Industrial Tires, furnished as original equipment by leading manufacturers of industrial trucks, tractors and trailers.

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new **U. S. Industrial Tire Manual**

IN EVERY SERVICE U. S. TIRES EXCEL

Serving Through Science

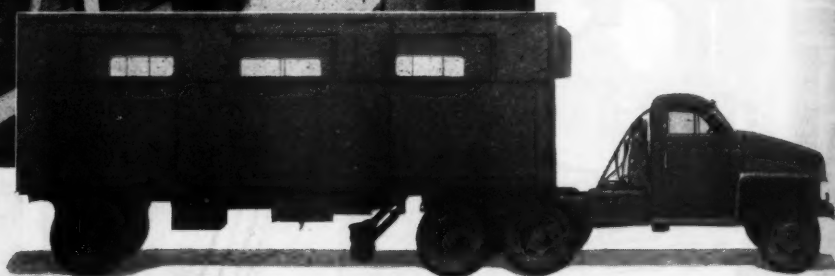
UNITED STATES RUBBER COMPANY



1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, NEW YORK



**"Shoe hospitals" on wheels
WENT WHERE THE ARMY
NEEDED THEM**



War is hard on shoes. And good shoes are a fighting essential.

A big-time general has said "The army mends more shoes than all the other cobblers in the world."

During World War II a lot of these shoes were mended in mobile shoe repair shops which were made by Gerstenslager.

These big 10-ton vans were built to order for the Ordnance Department. Building vans to order is our specialty—and with U. S. war needs met in full our customers will benefit from the broadened experience which our war production has given us.

THE GERSTENSLAGER CO.

Wooster, Ohio • Established 1860

TRAILERS AND CUSTOM-BUILT BODIES FOR VANS AND TRUCKS

If you have a MATERIALS HANDLING Problem take it to MERCURY

Whatever your handling problem, you will find that Mercury can help you. As the originator of "The Trackless Train" system of materials movement, and a company with over thirty-five years experience in the designing, manufacturing and installing of handling equipment, Mercury has the background to cope with the most difficult handling situations.

This experience, plus the proved high efficiency and dependability of Mercury equipment, has been responsible for the wide popularity of Mercury tractors, trailers and lift trucks in manufacturing and distribution.

For "on the spot" consultation on your specific problems, you are urged to call a Mercury Sales Engineer. There is no cost or obligation. Or if you prefer, write for your free copy of the Mercury Catalog Number 7-11. It includes complete data and specifications on all Mercury equipment.



Compact construction, power and easy maneuverability characterize Mercury fork trucks. They are available in capacities from 2000 to 6000 lbs.



Mercury "Jeep" fork truck, 2000 lbs. capacity. Compact size makes it the ideal truck for car loading as well as narrow aisle operation.



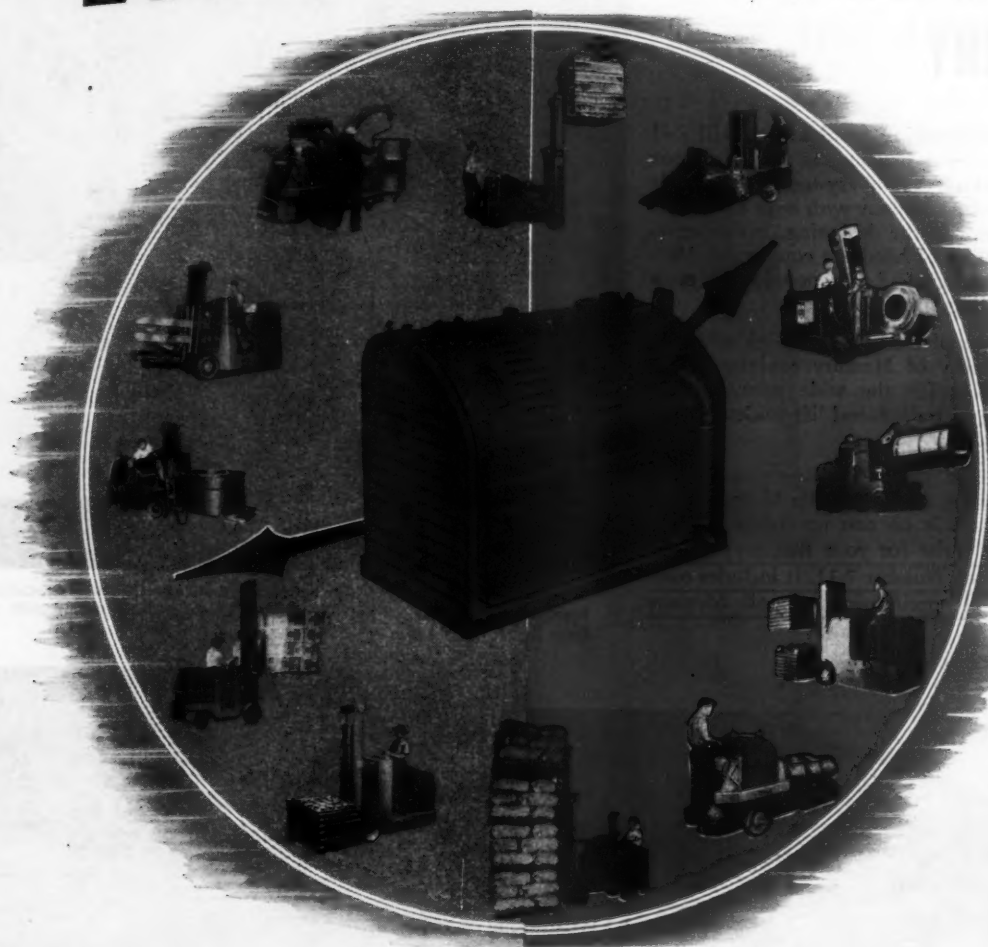
Mercury "Trackless Train": Mercury trains of A-310 trailers, powered either by the "Tug" electric tractor, or "Banty" gas tractor, are widely used in the manufacturing and distribution industries.



MERCURY

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4104 SOUTH HALSTED STREET CHICAGO 9, ILLINOIS
TRACTORS • TRAILERS • LIFT TRUCKS

POWER *Unlimited!* **24 HOURS OF EVERY DAY**



*Specify Ready-Power
Gas-Electric Units for
New Trucks or to
Répower Present Trucks*

Industrial trucks equipped with gas-electric Ready-Power Units are ready to go when you want them. There is no delay for battery installation . . . the power is generated right on the truck chassis, thus permitting top speed, round-the-clock operation. Many owners say they get 25% to 50% more tonnage at lower net cost through the use of Ready-Power Units. Convert now to Ready-Power and get the full advantage of continuous power . . . 24 hours of every day.

THE READY-POWER CO.

DETROIT, MICHIGAN, U. S. A.

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PHILADELPHIA, PA. • SEATTLE, WASH. • WASHINGTON, D. C. • TORONTO, CANADA

Built to go farther for less!

WHAT total mileage do you expect from your trailers? Some of the figures we get from Highway Trailer operators seem at first to border on the fantastic—until you consider how Highway Trailers are built. But when you remember that Highway Trailer engineers are backed by over a quarter-century of successful experience, it's easy to understand that Highway Trailers are truly "built to go farther for less."

In design, in efficient use of materials, and in time-saving production methods, the new Highway commercial "Freightmasters" and "Clippers" make the most of lessons learned in building thousands of specially designed trailers for war use. Complete production control is possible because most of the manufacturing is done in Highway's own modern plants. Results: Longer life, lower hauling costs.

HIGHWAY TRAILER COMPANY

Factory and General Offices, Edgerton, Wisconsin

Truck Trailers and Bodies • Earth Boring Machines
Winches and other Public Utility Equipment

WAREHOUSEMAN'S VAN BY HIGHWAY

In our Warehouseman's Van you will find every modern feature—extra capacity and low ton-mile cost, and low maintenance. Write today for new color folder.

ON EVERY
U. S.
HIGHWAY



HIGHWAY AMERICA'S QUALITY **TRAILERS**

HYSTER proudly presents the



HYSTAWAY

...A DRAGLINE, CLAMSHELL
AND CRANE COMBINATION
for use with *Track-Type
Tractor and Bulldozer...*
ALL IN ONE WORKING UNIT

Multiplies the production use of your "CATERPILLAR" DIESEL TRACTOR...

- ✓ **SIZES.** Available for the "Caterpillar" models D6, D7, D8.
- ✓ **DRAGLINE AND CLAMSHELL.** Handles (on a D7) $\frac{1}{2}$ cu. yd. dragline bucket; $\frac{3}{8}$ cu. yd. digging clamshell or $\frac{1}{2}$ yd. rehandling clamshell. Other models in proportionate capacities.
- ✓ **CRANE.** Swinging live boom, with maximum lifting capacities in any position.
- ✓ **MOUNTING.** On in 2 hours (with 2 men); off in 1 hour.
- ✓ **MOBILITY.** Full tractor mobility is retained. Crawler track oscillation is not impeded. Tractor rigidity when desired is accomplished by crank control at masthead.
- ✓ **OPERATION.** Conventional shovel and crane controls. 240° swing at speed of 4.5 RPM.

THIS is the most important product announcement Hyster Company has made in the 16 years we have specialized in building tractor equipment.

The addition of a Hystaway to a "Caterpillar" track-type tractor gives you *one piece* of production machinery that combines tractor—bulldozer—dragline, clamshell and crane.

Back of Hystaway lies the best engineering skill in the tractor equipment business. Years of field tests in various sections, under all working conditions, have proved Hystaway's performance, stamina, versatility.

READY. Completely illustrated booklet on Hystaway—how it's built—what it does—how it does it. Write for your copy.

**Sold and serviced by "Caterpillar" dealers
and distributors throughout the world.**

HYSTER COMPANY 2940 N.E. Clackamas, Portland 8, Ore.
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IF YOU WANT *Action*

Move Your Materials With **SHOP MULES**

MULE POWER beats man power! These small, sturdy, powerful tractors haul and push *faster* with fewer men. **SHOP MULES** move material from stock room to and between processing points, or finished product to shipping docks or storage. Equipped with snow plows, they keep yards, R.R. sidings, driveways, walks, and parking lots accessible. Other attachments . . . electric arc welders, winches, rotary sweeper brooms, etc., increase utility. Three wheeled **A3 VICTORY SHOP MULE** pictured is only 40" wide and turns in 66" radius . . . Powerful enough to pull a loaded freight car, yet agile as an eel for navigating congested areas.



HEBARD

INTERNATIONAL HARVESTER POWERED



Information, parts and service at all International Harvester Industrial Power Distributors. All Hebard **SHOP MULES** are International Harvester Powered.

**HEBARD
A3 VICTORY
SHOP MULE**

W. F. HEBARD & CO.
2433 S. STATE ST.
CHICAGO 16, ILL.

**Mule Power
Sounds Good!**

SEND YOUR CATALOG

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**MODELS FOR EVERY SIZE PLANT
AND FOR HEAVY OR LIGHT HAULING OR PUSHING**

HEBARD SHOP MULES are made in several models to meet the wide range of work in both large and small factories, foundries, steel mills, warehouses, railroads, airplane builders, airlines, etc. 27 years of experience in solving materials movement problems! Write for complete Hebard **SHOP MULE** catalog and assistance on your problem.

MAIL COUPON TODAY!

W. F. HEBARD & CO. • 2433 S. STATE ST. • CHICAGO 16, ILL.
CREATORS AND MANUFACTURERS OF SHOP MULES SINCE 1918

Waiting is no Fun...

BUT—

THE NEW GAR WOOD WINCHES ARE ON THE WAY!

On certain occasions waiting is more than justified. For instance, in the near future Gar Wood will announce the most radical improvements ever made in truck and tractor winches . . . this time for civilian use on countless industrial jobs.

Created for the vast and exacting military requirements these new winches are so entirely different . . . and better, they practically obsolete all truck and tractor winches of prewar vintage.

The details will be released at the earliest date consistent with present reconversion plans . . . these new and better winches are well worth waiting for.



GAR WOOD INDUSTRIES, INC.

WINCH AND CRANE DIVISION

DETROIT 11, MICH.

WORLD'S LARGEST MANUFACTURER OF TRUCK AND TRAILER EQUIPMENT



HOISTS AND BODIES • TANKS • ROAD MACHINERY • HEATING EQUIPMENT • MOTOR BOATS

UTTERLY NEW TANDEM ACTION

solves All 3 Old-Tandem Troubles!



New Rocking Member Cuts 12 Moving Parts to 2

Smooth and Easy BALANCING Stops Scuffing, Saves Tires — Parts are STANDARD — Available Everywhere

The tandem is now a unit without vibration—a suspension which equalizes loads onto double axles in a way that *smooths* and *steadies* even the toughest braking action. Tires are no longer unduly scuffed, and therefore, last *much* longer!

And it is a tandem practically without wear and maintenance. It has only two moving parts, instead of the old 12-piece, rattling, extra-mechanism. And these two moving parts have big, over-sized bearings.

Better still, all parts of this new-type tandem are standard, and completely interchangeable—quickly available at every Trailmobile Service Center, in all principal cities.

Now, no longer do needless parts "fight against" each other. Instead, only 2 rugged, "rocking-beams" within the frame "ride with" each shock-

ing force—they pick-up road-shocks promptly, and then "lazily" transfer and *distribute* stresses *throughout* the *entire tandem structure*! Furthermore, these rocking-beams maintain

TRUCK DEALERS

You will find it advantageous to contact our nearest Trailmobile Branch, and to discuss Postwar Trailer Opportunities!

absolute and constant load balance, between both axles. They do all this despite *extreme* road-shocks or sudden violent braking!

So see Trailmobile's new tandem at your Trailmobile Branch. Watch its "lazy" *gliding* ride! Check for yourself its *complete* specifications. Get *all* its many, extra advantages. You will be very welcome.

**The Trailmobile Company,
Cincinnati, Ohio**



Protecting its 104 Year Reputation

— 66 "Homefolks" Service Centers

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THE TRAILMOBILE COMPANY

IN DECEMBER 1944
WE ANNOUNCED...IT'S

Now—the New
Crescent Electric

PALLETIER
IS HERE!



ACTUAL production of the new Crescent Electric PALLETIER marks the completion of nearly eight years of meticulous research and experimentation, devoted exclusively to the development of a "super" industrial fork truck.

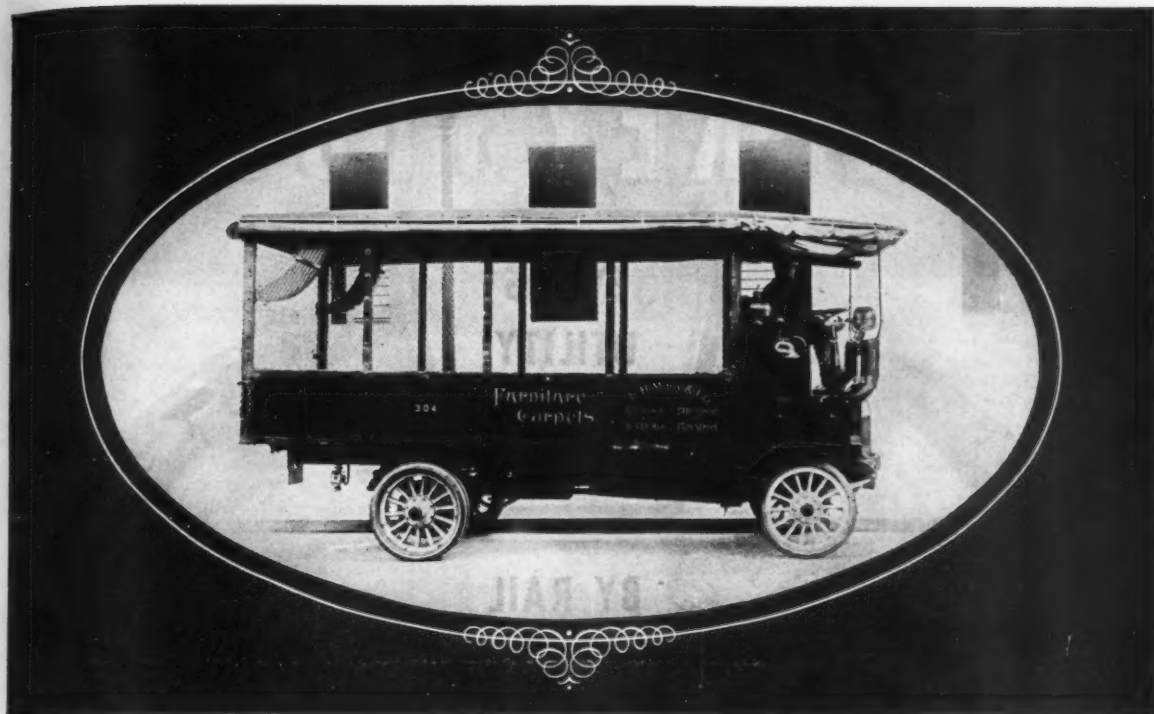
We've accomplished what we set out to do. The PALLETIER incorporates every desirable quality of

modern fork trucks plus additional refinements and exclusive features. It offers you advantages never before obtainable.

The PALLETIER is the answer to your materials handling problem. It's tomorrow's industrial truck—today. Write for full details and specifications.

Crescent TRUCK CO., 1135 Willow St., Lebanon, Pa.

Crescent **ELECTRIC TRUCKS AND TRACTORS**
Industrial Truck and Tractor Specialists Since 1917



When "Ain't it awful, Mabel?" was
the latest thing in slang...

MACY'S CHOSE MACK...AND STILL DOES!

R. H. Macy & Company bought its first Mack way back in 1908.

That was the eighth year of Mack production, and Mack Trucks had already won a nationwide reputation as brawny demons for work. The first Mack was produced in 1900 in the Mack Brothers wagon works. *It stayed on the highways for 17 years.*

Mack can look back on 45 years of pioneering... 45 years of knowhow... 45 years of recognized leadership. Mack has had 45 years to observe where and why trucks give trouble—and to see to it that trucks named "Mack" don't!

That's why Macy's still chooses Mack. That's why, for nearly half a century, Macks have been the year-after-year choice of so many companies with outstanding histories of successful operation.

★ BUY THAT VICTORY BOND TODAY ★

Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities.



Making deliveries for "the world's largest store" is a tough job—a Mack job. And here's one of the mighty Macks that does it. For endurance, performance, economy, you can't beat a Mack.

Mack
TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS



Performance
Counts

THE KEYSTONES

**EVANS
UTILITY
LOADER**

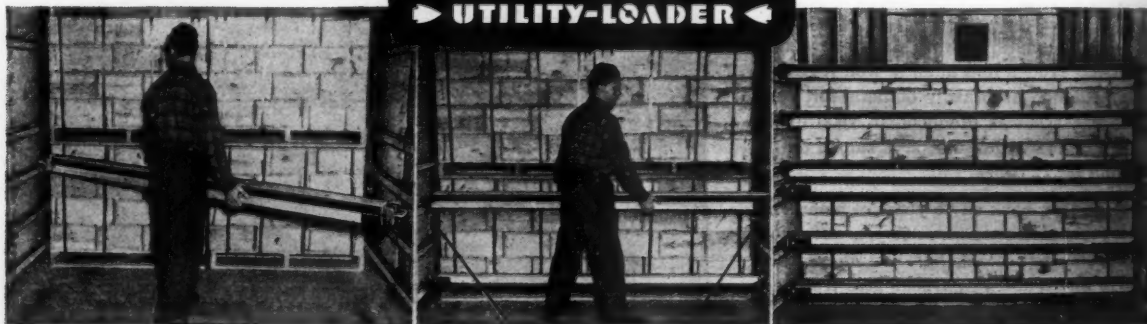
BY RAIL

The Evans general purpose Utility Loader is box car equipment that protects freight against damage in transit. Because the Utility Loader *grips* the load and *locks* it against vibration, shock and shifting, it is the "keystone" of safe shipping by rail. Shipped in a Utility Loader car, any cargo, regardless of

its size, shape or weight, arrives unmarred, *completely* undamaged. The photographs below show the quick simplicity of loading one type of load with the general purpose Utility Loader. Write for the Evans Manual illustrating the wide and profitable range of Utility Loader adaptability.

GRIPS *and* **LOCKS**
THE LOAD THE GRIP

► **UTILITY-LOADER** ◄



FOR THE GOOD OF THE RAILROADS



EVANS PRODUCTS

OF SAFE SHIPPING

**EVANS
SKY
PRODUCTS**

BY PLANE

Evans Sky Products are literally "safety belts" for air cargo. They tie-down air cargoes of any size, shape, weight or character . . . protect them against shifting, damage and breakage . . . and protect the plane itself against injury. The rapid development of Sky Products during the war makes them the "keystone" of safe shipping

for air transport. Shown below are only a few of the many adaptations of Evans Sky Products that now provide more flexible flying service to shippers of air freight. Write for a copy of "Sky Loadown"—an illustrated pamphlet containing news of what Evans Sky Products will mean to safe peacetime shipping by air.

SAFETY BELTS FOR AIR CARGO

► SKY LOADER ◀



SKY PRODUCTS DIVISION

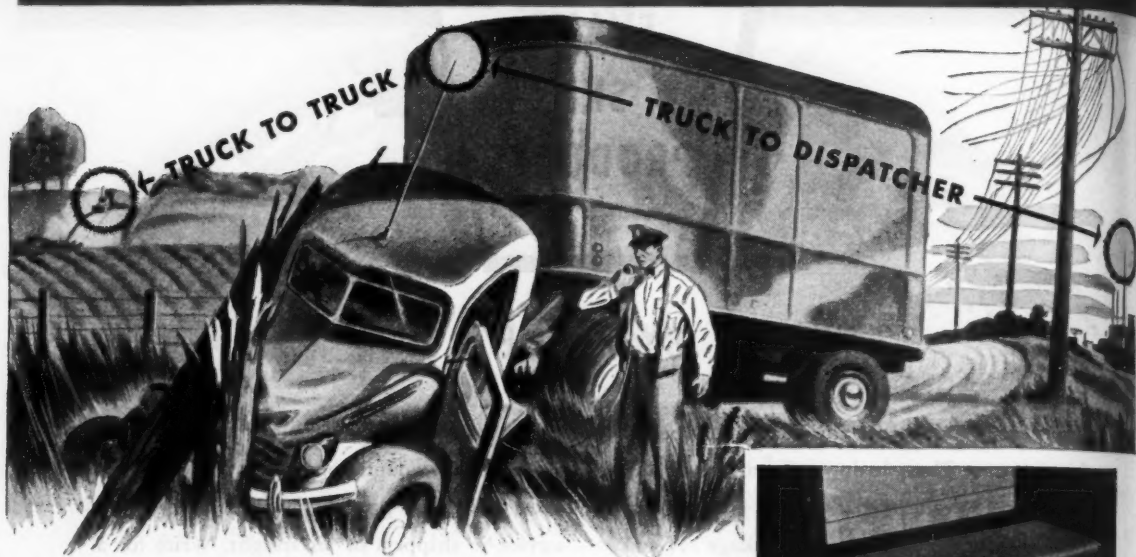
COMPANY DETROIT 27, MICHIGAN

Motorola

F-M

2-WAY RADIOTELEPHONE

WILL **SPEED** YOUR TRUCKING OPERATION!



A. T. A. ENDORSES 2-WAY RADIO!

The American Trucking Association, Inc., using Motorola experimental equipment, has conducted tests to ascertain the practicability of 2-way radio as applied to the nation's trucking system. The A. T. A. has found that radio can greatly increase the efficiency of both local and cross-country trucking, and cited the following reasons in their application to the FCC:

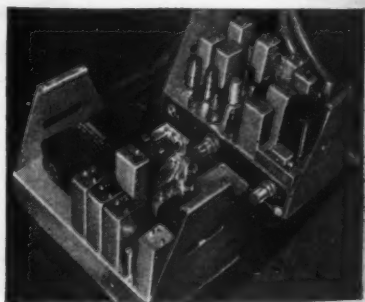
- 1.—Trucks can be rerouted to avoid dangerous road conditions; traffic tie-ups, etc.
- 2.—Drivers can call for medical aid in case of accidents (thereby assisting all highway users and cutting the country's accident death toll.)
- 3.—Dispatching operations are facilitated because dispatcher is in constant contact with trucks, repair crews and supervisors.
- 4.—Cooperate with State Police.

CHOOSE MOTOROLA FOR PROVED DEPENDABILITY

Motorola systems already in use on railroads, bus lines, etc., have proved their efficiency. Highway police of 36 states and over 1500 communities depend on Motorola for unfailing service. Motorola engineers *know* mobile communications, and their vast experience in the field will enable them to make specific recommendations concerning *your* communications problems. Write today—there's no obligation, of course.



Typical Motorola installation for use in dispatcher's office.



One of the many types of Motorola mobile units for use in trucks, etc. (Shown with dust-covers removed)

GALVIN MFG. CORPORATION • CHICAGO 51
COMMUNICATIONS AND ELECTRONICS DIVISION
F-M & A-M HOME RADIO • AUTO RADIO • PHONOGRAPHS • TELEVISION • AIRCRAFT RADIO • POLICE RADIO • RADAR • MILITARY RADIO



Yale Electric Industrial Trucks save time and effort—are power-packed to speed the movement of tremendous tonnage per day . . . travel fast and maneuver easily in congested areas. High lift models save storage space.



Yale Hand Lift Trucks are ruggedly built for long life—provide easy lift, easy roll, easy steer—take the shorter hauls at a fast clip. Wide range of models and capacities for handling skids, skid bins, and pallets.



Yale Hoists—hand chain and electric models—are efficient time and labor savers that make light work of heavy lifting jobs—conserve worker energy, speed production and maintenance and cut handling costs.

CUT THE SWEAT . . .

AND YOU WIPE OUT "MUSCLE MONEY"

Tolerate wasteful, haphazard methods of lifting, shifting, and storing warehoused goods, and you become a victim of "muscle money"—those high handling costs which are always present when time, effort and storage facilities are utilized unwisely.

Eliminate "muscle money" in your handling operations. Use modern, big-capacity Yale Electric Fork Trucks for "mass moving" goods quickly, efficiently and *economically*. These powerful tools handle enormous volume per day, spot loads accurately, stack to the ceiling

. . . enable you to save time, use storage capacity to best advantage, simplify inventory, conserve human energy, increase the safety factor for loads and workers.

Learn how rugged, easily-maneuvered, cost-cutting Yale Electric Trucks and other Yale Materials Handling Machinery, can assure maximum profit for you in warehousing and distribution operations. Full details are yours for the asking. Call in the nearest Yale representative or write to The Yale & Towne Manufacturing Company, 4530 Tacony Street, Philadelphia 24, Pa.

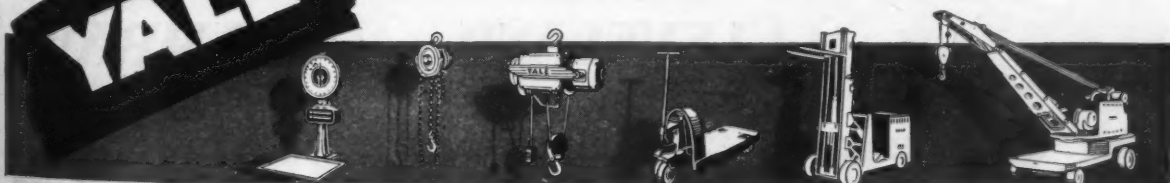


Kron Springless Dial Scales, made by Yale, eliminate excessive time- and money-wasting handling operations, provide accurate, efficient, low-cost weighing and counting of all kinds of materials. Available in all types from bench to crane scales.



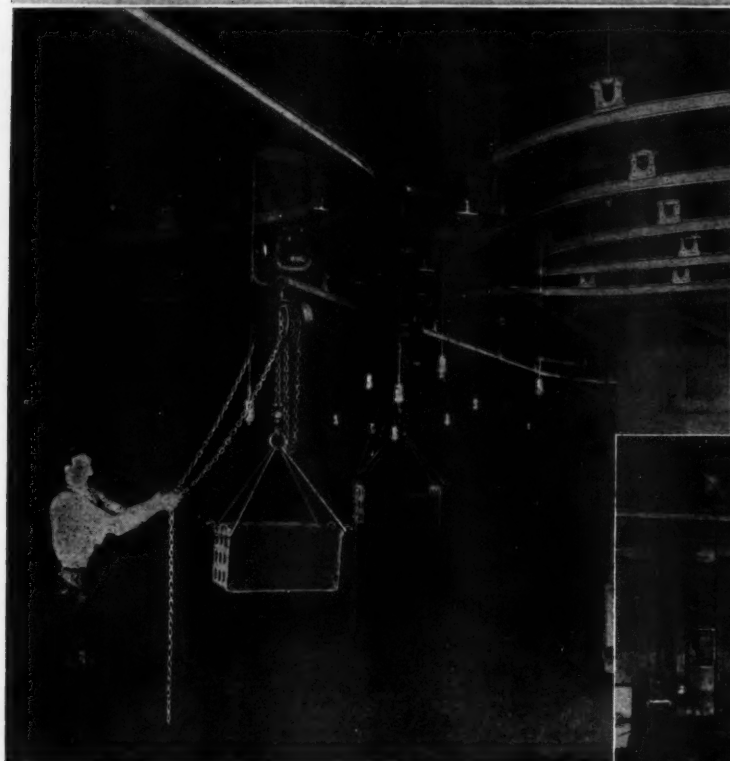
MATERIALS HANDLING MACHINERY

CUTS HANDLING COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY



HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES

POINT TO POINT TRANSPORTATION ELIMINATES IN-BETWEEN HANDLING



*Saves
time!
Cuts costs!*

Materials are delivered
directly on overhead
rail system



With a Cleveland Tramrail overhead materials handling system the three usual steps involved in materials handling — pick-up, convey, set-down — are reduced to one simple operation. Thus two costly steps of in-between handling are eliminated.

Materials are delivered direct from point to point with easy rolling carriers on smooth overhead rails. There is no stopping and

waiting as transportation is overhead, away from floor traffic and congestion.

Cleveland Tramrail equipment has been developed to handle nearly every conceivable kind of material. Whether you are interested in an inexpensive chain hoist and carrier, or a plant-wide electrified system, Cleveland Tramrail engineers can aid you.



GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy.

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
1179 EAST 283RD ST. WICKLIFFE, OHIO.

CLEVELAND  TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

BEFORE YOU ORDER ANY VAN TRAILERS

Let me tell you about

HERMAN VAN TRAILERS

The **HERMAN BODY CO.** *Manufacturers of*

4400 CLAYTON BLVD.
Franklin 5300
ST. LOUIS 10, MO.

**MOTOR TRUCK BODIES
and EQUIPMENT
TRUCK TRAILERS**

To Prospective Buyers of Furniture Van Trailers:

A short time ago a man from Indiana came into the office. One of his drivers had recommended HERMAN as the best job in the industry. He decided to come in and see for himself.

So we showed him around....took him through the plant. He saw at first hand why a HERMAN is the best Furniture Van Trailer in the industry. He said, "No wonder I see more and more Hermans all the time. I'll be proud to own one, too."

These same sentiments time after time have been expressed to us by hundreds of others throughout the country, but I am more proud of HERMAN Furniture Van Trailers than anyone else in the world and am eager to serve you.

This letter is not addressed to Herman customers. They know us and like our equipment and like our method of doing business. So if you haven't given us much thought in the past, just drop me a line or phone me long distance (Franklin 5300 in St. Louis). Remember, the first move comes from you. We pay no commissions, middleman's profit, or out-of-town overhead. This is one of the reasons why I can give you more value for your investment....and a better trailer too. You give us the lead and we'll follow through and take care of you right.

Cordially yours,

E.C. Simmons

E.C. Simmons



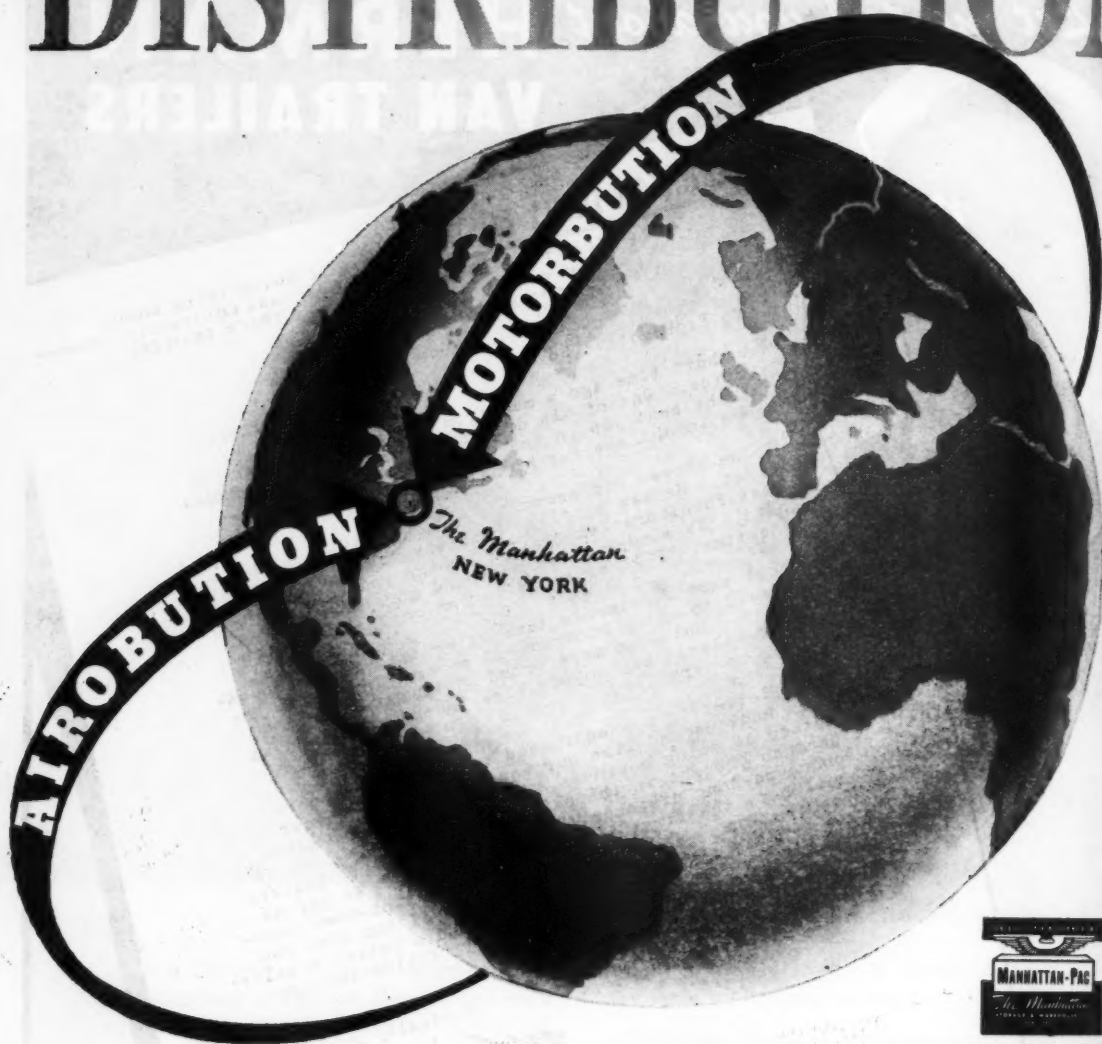
HERMAN BODY CO.

4400 CLAYTON BLVD.

ST. LOUIS 10, MO.

E. C. SIMMONS
Vice-President

DISTRIBUTION



THE LABEL OF PERFECT
AIR CARGO PACKING

MOTORBUTION means shipping and distribution by motorized carriers . . . Our indoor, protected loading platform can accommodate six large truck-trailers or trucks simultaneously. Modern equipment, strategic location, experienced personnel and flexible deliveries mean efficient and economical distribution.

AIROBUTION means shipping by air cargo. Our new Air Cargo Packing and Distribution Division provide scientifically correct packing to insure lightness, strength and weather resistance, backed by 63 years' experience in packing and shipping every type of merchandise. We invite your inquiries on any of your air-cargo packing problems.

WEIGHING • STRAPPING • LABELING • SPOT STOCK SHIPMENTS • MARKING • SEALING • BALING • SPECIAL CASES

The Manhattan STORAGE & WAREHOUSE CO.

AIR CARGO PACKING AND DISTRIBUTION DIVISION

7th AVENUE and 52nd STREET, NEW YORK 19, N. Y. — CIRCLE 7-1700



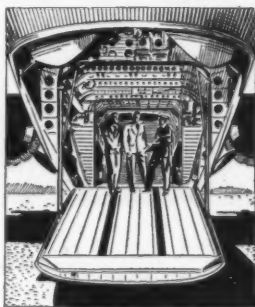
*The Conestogas...
Yesterday and Today*

Blazing a new trail...

SKYWAY FREIGHT goes anywhere, anytime.
Flown by the famous *Flying Tigers!*

Now you can contract air cargo to any city, at any time, via National SKYWAY FREIGHT—the Flying Tiger Line. Huge Conestoga twin-engine transports, with a daily capacity of 70,000 lbs., are now in operation, manned by former Flying Tigers who served in China, veterans of more than 4,000 cargo trips over 'the Hump'. This is the first all-veteran commercial flying organization.

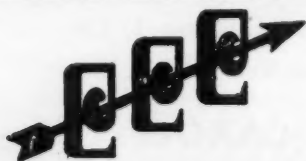
For rush shipments, or for perishable goods, SKYWAY FREIGHT is ready to serve the nation's manufacturers, distributors or private shippers as contract carriers.



Conestoga cargo space is 25 feet long, 8 feet wide, 8 feet high; load 5 tons.

Each Conestoga carries up to ten thousand pounds. For information, address National SKYWAY FREIGHT Corp., Administration Building, Municipal Airport, Long Beach 8, California; 17 East 42nd Street, New York, N. Y.

**DAILY CARGO
SERVICE TO
BOTH COASTS**



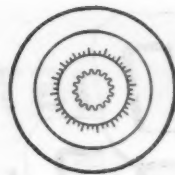
"Three C's are going places!"

Shipments via CCC HIGHWAY—
Come through without delay.

THE CLEVELAND, COLUMBUS & CINCINNATI HIGHWAY, Inc.
215 Euclid Ave. DIVISION OF U. S. TRUCK LINES Cleveland 14, Ohio

DISTRIBUTION AGE

EDITORIALS



Motaircargo

FRESH evidence of broader coordination between air and highway carriers is presented in several articles in this issue.

An increase in the volume of air cargo will benefit distribution in several ways. It will improve all modes of transportation by stimulating competitive and coordinating carriers. It will increase the efficiency of ground handling which, in turn, will improve handling methods in other fields. It will make better packing and packaging necessary. It will encourage improved warehousing operations. It will hasten the development of new marketing techniques. It may have the effect of simplifying financial arrangements and of standardizing insurance policies because the time element involved in the transfer of many commodities from buyer to seller by air transportation makes smaller inventories, faster capital turnover and short term insurance coverage feasible. Better service and maintenance in all of these phases of distribution will be required also by the exigencies of new demands.

In short, the development of air cargo is likely to quicken improvements in all aspects of distribution, because the things that will facilitate better air cargo operations are the very things that are needed for more efficient and economical distribution.

Noteworthy

IN an article elsewhere in this issue, Maj. C. L. Saperstein tells about some of the inexcusably bad packing that he encountered as a packing control officer in the air force during the war. It seems incredible that American industry at a time of national crisis could have been guilty of such downright inefficiency and wanton carelessness. In some cases, one is tempted to term it criminal negligence. Certainly, top management could well afford to give more attention to packing and shipping practices.

There just wasn't time for the army to return damaged materials to manufacturers. Millions had to be spent for salvaging and repacking.

However, this led to the development of better research and more scientific packing. As a result, if industry uses this information, it should be able to increase packing efficiency and reduce packing costs.

Maj. Saperstein's work in improving packing and shipping methods has been noteworthy. The articles he has prepared for *DISTRIBUTION AGE* are outstanding contributions and merit the attention of specialists and industrial executives everywhere.

Packing or Packaging?

WE have been asked whether we make a distinction between packing and packaging.

We do.

Packing is the act of preparing a shipping container for shipment. Packaging is the act of preparing an individual unit of merchandise for resale.

To pack is to dispose with orderly arrangement in secure and compact shape, within a shipping container, or vehicle, packages or other things that are to be transported and handled in commerce. To package is to dispose appropriately in individual containers, designed primarily for sales appeal, articles or materials that are to be merchandised.

An expert packer is one who is skilled in preparing shipping containers for shipment. A packaging expert, on the other hand, may be an industrial designer, a merchandising specialist, a box manufacturer, an advertising man or a lithographer.

We believe that a container designed chiefly for sales appeal should be designated as a package because it is an item intended to be merchandised, usually through a retail outlet; and that a container, whether it holds consumer goods or products for industry, if it is designed chiefly for the protection of commodities in transit should be designated as a packing case or shipping container.

In brief, packing is concerned with shipment; packaging with sales. A packing case, whether of wood, fibre board or metal, is intended primarily for the protection of merchandise in transit; a package, whether of paper, metal or glass, is intended primarily for sales appeal.

Charles D. Brown

EDITOR

DD DISTRIBUTION DIGEST

... personalities, problems, products and possibilities

Ego Deflation . . . That advice by a hardware executive is worth the serious consideration of all manufacturers, wholesalers and retailers, says Charles J. Heale, vice president and editor of "Hardware Age." Business, Mr. Heale says, is feeling too important because it has enjoyed greatly increased sales; has got out of debt; has collected its bills; has had the money to pay bigger-than-ever taxes; can sell anything that can be made or obtained; and is actually handling more money than ever before. What isn't realized is that these abnormal volumes and profits are due to war conditions which have skyrocketed all business. Too many think their growth has been due primarily to their own brains and initiative . . . and, broadly speaking, it isn't so!

Automotive Council Disbands . . . The Automotive Council for War Production representing the total productive power of the automotive industry, dedicated on a voluntarily cooperative basis to the task of winning the war, was disbanded Oct. 1 in preparation for a return to normal competitive activity. "The competitive traditions," Alvan Macauley, president, tells us, "which are so characteristic of our industry have been the chief source not only of the industry's growth in the past half century but also of the strength it was able to summon for its extraordinary tasks in the wartime years just ended." The combination is credited with producing one quarter of the national wartime output of weapons and materiel.

Seafood Air Rates Cut . . . Substantially reduced rates on air express shipments of fresh seafood and cooked shrimp flown between New Orleans and 21 cities have been announced by the Air Express Division of the Railway Express Agency. The present minimum of \$1 per shipment will be maintained.

More Distribution Clinics . . . Distribution clinics, under sponsorship of the National Assn. of Mfrs., are scheduled for October as follows: Cleveland, Oct. 3; Detroit, Oct. 9; Chicago, Oct. 11; and Minneapolis, Oct. 18. Projected but not yet scheduled: Philadelphia, Atlanta, Dallas, St. Louis, Los Angeles, San Francisco, Portland and Seattle. Bart L'Hommedieu, 14 West 49th St., New York 20, is secretary.

Truck Cargo Thefts . . . Truck cargo losses in 1944 amounted to about 20 million dollars, we are told by "The Spectator" well known insurance pub-

lication. Thefts and hi-jacking accounted for most of the loss and post-war data indicates no material change is likely for several years at least.

Motor Truck Statistics . . . Slightly over 111 thousand trucks for civilian use and about 299 thousand for military service were built during the first six months of 1945, according to a survey by Marcus Ainsworth, the Chilton Co.'s chief statistician. With the stoppage of military vehicle production it is likely, says Mr. Ainsworth, that a minimum of 400 thousand trucks can be produced during the first half of 1946.

No Truck Rationing After Dec. 1, 1945

Rationing of all new commercial motor vehicles, including trucks, tractors and trailers, will be terminated Dec. 1, 1945, the Office of Defense Transportation announced recently.

"On that date," said Guy A. Richardson, director, ODT Highway Department, a free market will obtain in the purchase and delivery of commercial motor vehicles. Truck sales will be a matter involving buyer and seller, except as regulated by agencies other than ODT."

Motaircargo Expansion . . . Plans for setting up equipment and schedules for handling nearly one billion pounds of air cargo yearly are being developed by at least 19 airlines. Four airlines, we are told by the Air Transport Assn. are now operating 15 exclusively cargo planes on 34 daily flights over 45,627 route miles; in addition, six weekly international hops covering 15,994 route miles have been established for a total of 61,621 miles. On order, ATA reveals, are 409 new passenger planes and 22 C-47 Douglas Skytrains which are to be released for cargo purposes in the near future.

Headaches . . . Since the ending of the war a number of major problems affecting the future of air cargo transportation have come to the fore. According to views expressed by manufacturers, operators and shippers more air cargo experience is needed . . . better knowledge of costs . . . adjustment of rates . . . improved terminal facilities . . . better coordination of air-

ground facilities . . . improved planes . . . better adaptation of cargo space to loading methods . . . return loads . . . safety regulations . . . consumer and shipper education . . . market research . . . improved packing and packaging . . . reduction in weight and bulk of many manufactured products.

Trade Barriers . . . A survey by the National Highway Users Conference of 1945 states truck legislation reveals noteworthy progress in the elimination of many trade barriers. Bills in 34 states propose amendments to existing laws relative to size and weight of motor vehicles. Legislation was also introduced in 19 states proposing increased gasoline taxes. Idaho, Iowa and Kansas each increased the tax 1c. while Oklahoma distinguished itself by increasing its tax 2c. to collect 7½c., the highest levy in the nation. Florida, Massachusetts, New York, Ohio, Pennsylvania and West Virginia enacted laws providing for extension of temporary or expiring gasoline taxes. Idaho has repealed a one-mill tax, while Maryland proposes a 4c. tax on diesel fuel used on highways.

Humpty-Dumpty Words . . . "When I use a word," says Humpty Dumpty, one of Lewis Carroll's well-known characters, "it means just what I choose it to mean—neither more nor less." We are reminded of this Humpty-Dumpty attitude toward exact definition by a recent comment in "Transport Topics" the American Trucking Assns. weekly.

"Integration," we are told, "as the term is generally used in transportation circles, means the railroads' pet scheme for setting up a few railroad-dominated transportation systems offering all types of service—rail, truck, water, air and pipeline." The word, it is pointed out, is usually offered on a verbal platter well garnished with high-sounding and plausible phrases but when stripped of these phrases 'integration' is 'monopoly.'"

If, as charged, the railroads are using an honest word to mask monopolistic ends, their choice is the more subtle since in the distributive field "integration" means not monopoly but simply coordination, unification and simplification of various related activities in the interest of more economical and better distribution and, above all, for the preservation of free enterprise.

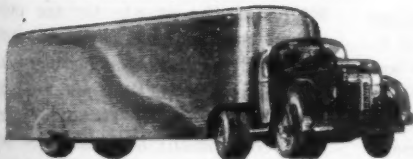


OUT OF THIS WAR —the Red Diamond Engine

International Red Diamond Engine. Heavy-duty power for heavy-duty work. Ample power and capacity—surprising economy. Proved in actual combat warfare, now available for civilian service.



The new Red Diamond Engine powers International Models K-8, K-5-8, KR-11, and KS-11.



THE rugged requirements of warfare on every battlefield have inspired the engineering genius of American industry.

Out of this war has come, for example, the *new International Red Diamond Engine*.

Tens of thousands of International Military Trucks and Half-Tracks—powered by this new International Red Diamond Engine—have set new transportation and combat records in wartime service.

Many of these mighty Red Diamond Engines have already gone into International Heavy-Duty Trucks for essential civilian use. The men who operate them will vouch for the stamina and economy of adequate power for any job.

When new trucks roll out in volume on America's highways, look to International for even greater economy, even greater dependability. And remember—for ten years before the war *more heavy-duty Internationals were sold than any other make*. Backed then, as now, by the *world's largest company-owned truck service organization*.

INTERNATIONAL HARVESTER COMPANY
180 N. Michigan Ave. Chicago 1, Illinois

NEW TRUCKS: The government has authorized the manufacture of a limited quantity of light, medium and heavy-duty International Trucks for essential civilian hauling.

SERVICE: Many operators will have to wait for trucks. Maintenance of existing vehicles is just as important today as before V-J Day. Therefore—be sure your trucks get top care and service at International Truck Dealers and Branches.



INTERNATIONAL Trucks

Motaircargo Developments

The next step in the development of motaircargo probably will be made when the airlines are in a position to handle full plane loads for individual shippers. Then the airlines will be ready to receive cargo from private trucks as well as from common carrier trucks with whom they have no agency agreement such as those now in force. This type of air and highway freight transport will at least double the tonnage that will be carried by air.

By JOHN H. FREDERICK
Air Cargo Consultant

THE first step in the achievement of motaircargo, the transportation to and from the air carriers by trucking operators other than the Railway Express Agency, was taken when American Airlines began its air freight operations in the latter part of 1944. At that time American Airlines entered into agency agreements with various trucking organizations in the terminal areas served by that airline for pick-up and delivery. This example was followed by Transcontinental and Western Air in July, 1945, when it started air freight operations on a similar basis. Neither of these airlines wanted to get into the trucking business, and neither had to. Existing motor carriers were ready to coordinate their services with that of air transportation.

Air Freight

Air freight services as offered by these two airlines differ from air express. Air freight involves the movement of cargo at rates published by the individual airlines without guarantees of shipment by the first available regularly scheduled plane after arrival at the airport; and subject to pick-up and delivery only during limited periods of the day. Transcontinental and

Western Air, moreover, supplies the pick-up and delivery service through cooperating motor carriers only if demanded by shipper or receiver.

The significant thing about the air freight operations of these two airlines, from the standpoint of motaircargo, is that independent truck operators were employed as agents for the air carriers to conduct the following services:

1. To pick-up shipments of air freight from consignors and deliver the same to a receiving point to be designated by the airline at the originating airport.
2. To deliver shipments of air freight from the destination airport to consignees.
3. To provide the necessary accounting and collection services in connection with pick-up and delivery.

Agreements between the airlines and truck operators are careful to state that pick-up and delivery operations are performed only in designated terminal areas by each trucker and that the agreement with an individual trucking company does not constitute an interline agreement between it and the airline for line haul between points served by the truck operator in his other business operations.

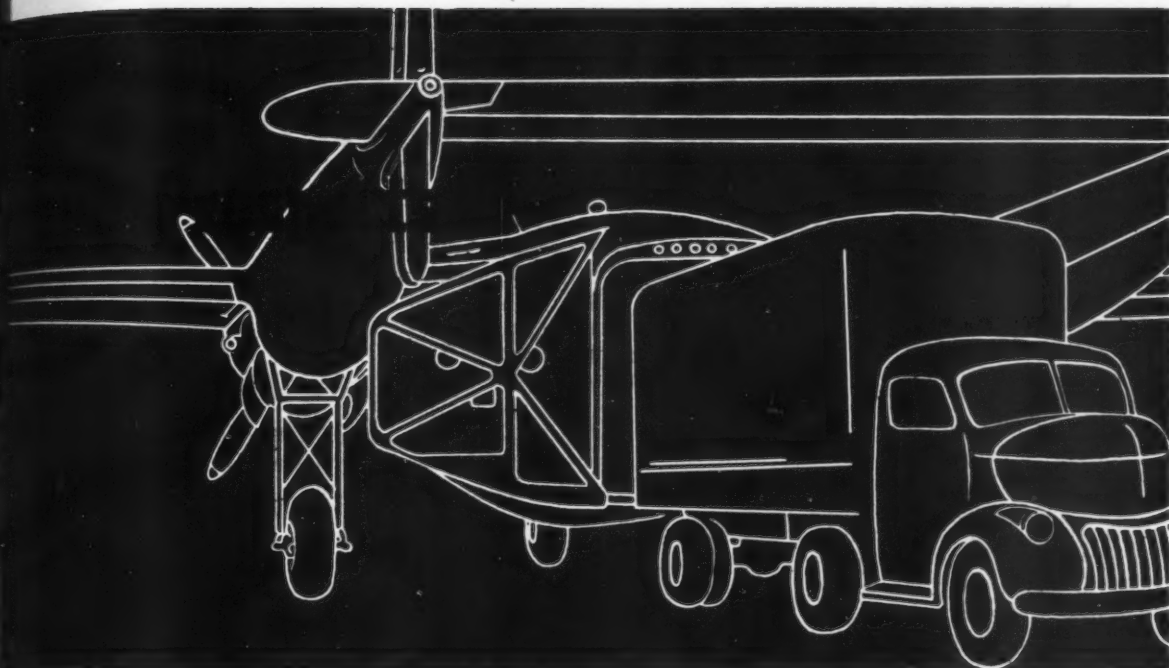
The airline-truck agreements

also provide that the truck operators will maintain downtown depots in each terminal area designated by the airlines and that "tripper" service between such depots and airports be supplied at the times and on the schedules believed necessary by the airlines for the proper conduct of air freight service.

Collections

Truck operators also agree to collect applicable C.O.D. charges on shipments delivered to consignees and to remit the full amount of the charges so collected to the airlines, or to advise the airlines of non-collection and return of any shipments within 24 hours after receipt by the trucking company for delivery to consignees. Truckers agree, in addition, that they are acting as the agents for the individual airline concerned and perform all services in the name of that airline with themselves designated as "agent." To supply adequate equipment and facilities for the proper conduct of its services is the responsibility of the trucking company in each case.

Air freight shipments are accepted either on a prepaid or collect charge basis and, where prepaid, the trucking organization collects



the proper charges, in advance, from the shipper unless the credit of the shipper and the terms thereof have been approved and his name included on an "approved credit list" furnished by the airline. Where shipments are moving on a collect basis the trucking organization collects the proper charges from the consignee upon delivery unless a similar credit arrangement is in force for such consignee. Should shipments be accepted by the truckers on any basis other than the two just mentioned, the airline reserves the right to deduct from the compensation to be paid the trucking organization amounts equal to the uncollected charges resulting from such shipments.

Truck operators procure and maintain, at their own expense, the public liability, property damage and cargo insurance and such other insurance in such other amounts as may be approved by the airline for whom they are performing the pick-up and delivery service. Moreover, the trucking operators agree to indemnify and hold harmless the airline from any liability whatsoever by reason of any loss or damage to persons or property incurred in or occasioned by the performance of the specific services agreed upon.

Motaircargo development on the

basis just discussed is perfectly logical and probably will be the method used by other airlines as they get into the air freight business.

While less-than-plane load traffic probably will require a complete airline controlled pick-up and delivery service for some time to come, the second step in the development of motaircargo will be made when the airlines are in a position to handle full plane loads for individual shippers. Then the airlines will be ready to receive cargo from private trucks as well as from common carrier truck with whom they have no agency agreement such as those now in force. If past experience is any guide, this type of coordinated air and highway freight transport will at least double the tonnage that will be carried by air.

Charter Cargo

Before the war more than half the traffic carried by the carloading companies was off-line traffic originating from points other than the terminal or destined beyond the terminal at the other end of the line-haul. Collection and distribution at either end of the rail haul was performed by motor trucks over distances several hundred miles beyond the terminal points.

The same type of coordination can be carried out between independent motor carriers on the one hand and the airlines on the other.

The larger airlines seem to be on the right path to achieve proper coordinated motaircargo operation. But what of the smaller or feeder-type airlines which may not be in a position to make the same sort of agency arrangements as the larger airlines? Plans are being developed for the establishments of warehouses and cargo-handling services at selected airports near major shipping and distribution centers in the United States, designed to produce charter cargo business for non-scheduled plane operators.

A west-coast firm, Cargair, Inc., is going into the business, not of air transportation, but of airport warehousing, ramp servicing, loading and unloading of non-scheduled and the smaller scheduled air carriers. Its plan has received the endorsement of the National Aviation Trades Assn., a group representing the non-scheduled and contract operators, in the belief that the establishment of a national system of airport warehouses for the proper handling of air cargo will greatly increase the cargo-carrying oppor-

(Continued on page 100)



MOTAIRHANDLING

UPON visiting some of our larger airports it would appear that little or no progress had been made in the methods of handling air cargo. In the Oct., 1943, issue of this magazine, the writer made several suggestions for the closer coordination of over-the-highway trailers and motor trucks as well as for the use of mechanical equipment at airports and in planes for handling cargo.

Last October in these pages stress was placed upon the elimination of waiting time, and definite recommendations were made as to how this could be accomplished.

In a number of issues since then, ideas, sketches and photographs have illustrated the practical application of better handling methods. Photographs in the July issue, pp. 46, 48, showed the Fairchild Packet Army Transport with fuselage loading level at truck floor level and with the loading of bulk cargo made easy by permitting the transfer of cargo from truck to plane. The plane is designed for bulk cargo with straight sides and with no obstacles such as sharp corners or curved sides to hinder loading.

Pack's Design

It will not be long before these planes will be available for commercial air cargo, and they will be strictly cargo planes. It is possible, in the near future, that we shall see a further development of ideas expressed by Harry S. Pack, director of functional engineering and air cargo development, Pennsylvania Central Airlines, as proposed in his paper presented before a number of air cargo meetings, including one at the American Society of Mechanical Engineers on March 12, 1945, in New York.

The radical design proposed by Mr. Pack calls for using the truck

trailer principle in the handling of air cargo at terminals and to and from planes by having the trailer removable from the plane fuselage. At present this seems rather fantastic. However, so many ideas expressed a few years ago which were not considered feasible are now in actual operation.

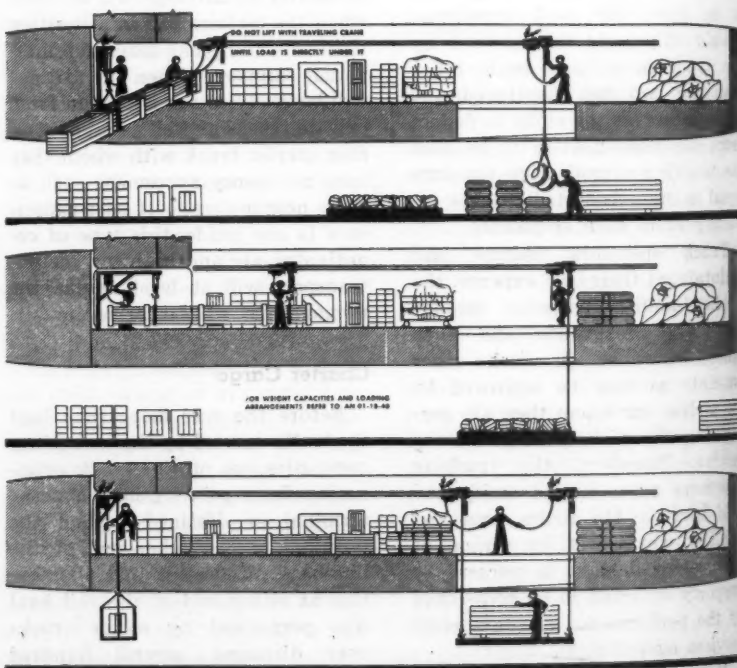
Experimentation

Constant experimentation is being made by the various airlines. Some of the advanced ideas have been released recently for publication. The August issue of *DISTRIBUTION AGE* showed an illustration of an experimental handling system that is being developed by United Airlines. In this illustration, it was pointed out that on the DC-4 and DC-6 cargo carrying planes, it was expected they would be equipped with belly pits in which it would not be possible for men to work efficiently because of the height. United Airlines, there-

fore, had developed a system of interchangeable cargo containers in the form of baskets measuring 66 in. x 34 in. and arranged with roller bearing trolleys so they could be transferred with several methods of handling such as tractor trailer trains or fork trucks, moved out to the plane and quickly loaded on to overhead cross rails within the belly pits of the plane. By having longitudinal rails on the underside of the cabin floor beams, it would be possible to slide the baskets either into fore or aft belly pits. Experiments had shown that it would be possible to load 4,500 lb. of cargo in five minutes.

Editor's Note: For suggested improvements in the design of cargo planes and of motor trucks, see "Design for Motaircargo," p. 42.

It is the writer's opinion, and also the opinion of others, that the airlines and the airplane designers are complicating the situation by



REDUCTION of ground handling time and costs in air cargo operations seems to be slow, but necessity will force improvements quickly with the increase of commercial operations

By MATTHEW W. POTTS
Materials Handling Consultant

mixing passengers and cargo, now, of course, chiefly express, in the same carrying medium.

The combination of the two seems to complicate the design of the airplane and it also complicates the loading and unloading of express cargo as the cargo space is secondary to passenger comfort. In recent conversation with air travelers, considerable complaints have been made regarding delays experienced at airports waiting for passengers' baggage to be brought from the plane to bus, taxi or automobile. This delay is seriously affecting the time saved in the high speed of air travel.

The airlines are going to have to eliminate this delay quickly by providing better facilities for handling baggage into and out of the plane. If they complicate their problem more by trying to handle air cargo in the same plane, then further delays will be experienced, as on railroad trains where the delay at stations

is not caused by passengers, but by handling mail, baggage and express shipments.

Radical as it might appear at the moment, it is the writer's opinion that we must have passenger airliners for passengers only. Their baggage should be available to them at all times, as in a pullman car. We must have cargo planes, both high speed and low speed, for the transportation of fast air cargo and bulk air cargo.

Cost Reduction

The mechanical equipment is available to speed up the handling on any given operation. But if the operation is tied in with too many others, thereby complicating the problem, it will not be possible to justify the expense of a piece of mechanical equipment for handling only a small quantity for each flight.

In order to reduce costs, handling operations in airports must be

mechanized. There are too many men standing around waiting to handle baggage, mail, air express and air cargo. Duplication of personnel on a number of airlines at any terminal materially increases cost.

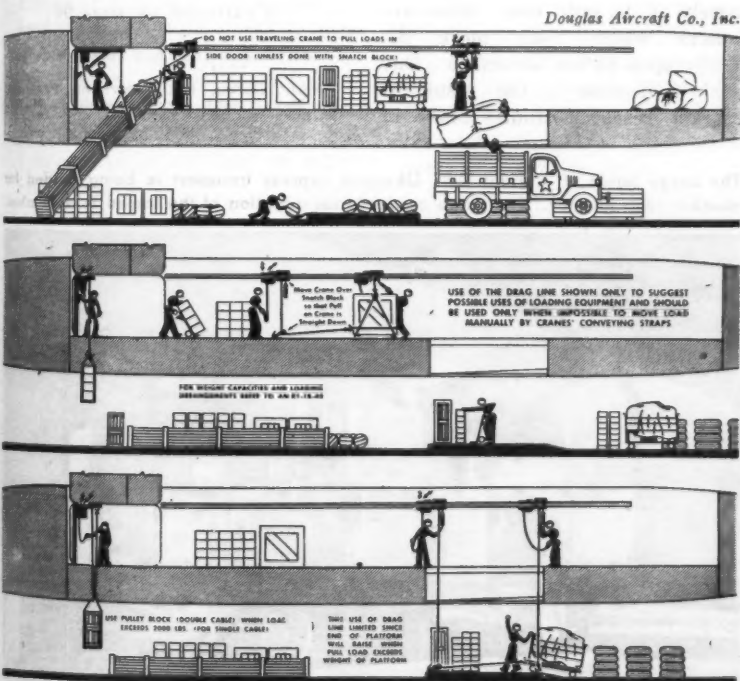
Standardization

It has been suggested that duplication of personnel might be corrected by having terminal operating companies handle for all airlines. Even if this were done, and the writer sees no reason why it couldn't be attempted, there would still be the need of standardization or at least interchangeable equipment between airlines. Instead of repeating the mistakes made by the railroads and motor transportation companies by not having standards, the airlines should profit by this experience and coordinate their equipment, and operations, so that a minimum amount of time and money will be expended in giving efficient service.

At present, the airlines are advertising and publicizing the time saving element in connection with air cargo. In a number of instances they can justify these claims, but in other instances, there is no time saved on door-to-door shipments, and the cost is much higher. This is particularly true on general cargo. If air cargo is to become the business that the airlines expect, it will be necessary to improve travel time and to reduce in cost. This can only be accomplished by considering the problem as a whole including the development of airports.

If we continue the building of airports on the same basis as we have in the past, including the new super-airport at Idlewild, New York, we will have spent considerable money in building large airports, for large airplanes, but will

(Continued on page 89)



Air Transport Assn. and American Trucking Assns. are two organizations with the same initials and the same ideas. Both groups are confident that they can work out the problems posed by the advent of motaircargo. When the proper service is available at the right price, they will knock at the shipper's door . . . together!

ATA

WEBSTER has much to say about the word coordinate, including the following: "to combine for a common action or purpose." Such a definition would readily be accepted by the air carriers' as precisely descriptive of their present and planned activities with motor carriers' and, while I am not in a position to speak for the latter, their attitude and actions have always more than confirmed their desire to achieve this common purpose in a manner consistent with all statutory provisions.

What is this purpose? How does it affect both groups? What has been done to advance it to date? This article will attempt to answer these three questions in order to provide some new information to the readers of *DISTRIBUTION AGE*.

False Conclusions

Much has been predicted concerning the anticipated place of air cargo in the scheme of things to come, but often such forecasts have been based on false assumptions (which have led, inevitably, to false conclusions) by reason of their too exclusive concentration upon the features of air transportation alone. This is a mistake, and a serious one, in the considered opinion of the air carriers. They know from their meager experience with air express that, even with the high percentage of "emergency" traffic moving in this package service, only 3.8 percent of shippers



By EMERY F. JOHNSON

Secretary, Air Cargo Section

Air Traffic Conference of America

and receivers deliver their shipments to, or pick them up at airports.² The great majority require, and are willing to pay for, door-to-door pick-up and delivery. Is this a poor index? Perhaps, but fortunately it is only one; there are others which bear more directly upon future air cargo. One such indication is the result of market research studies made in

the Detroit area.³ This city was selected because it represents one of the few points where geographical location of airports and industry generally coincides. The study disregarded the express business as such, with its established precedents of pick-up, delivery, and package size shipments; nevertheless, its results demonstrated convincingly that even with optimum geographical conditions, 71.5 percent of the potential users wanted cartage features provided as an integral part of their service. Again, for example, air cargo will be heavily patronized by retailers. Reliable indications are that no less than 90 per cent⁴ of the users in this category will require cartage to and from their places of business.

Air carriers have no false beliefs

(Continued on page 90)

² Air Cargo, Inc., test Direct Mail Survey, Oct., 1944.

⁴ Air Cargo, Inc. report on Potential in Department Store Receipts, March, 1945.

The cargo hatch of a giant C-87 Liberator express transport is being loaded for another swift journey. The cargo carrier is an adaption of the famed B-24 bomber.



¹ Any and all references to "carriers" in this article refer specifically to "common carriers." No features of contract operations or problems incidental to them are meant to be included.

² Survey made of REA pickup and delivery operations at 363 airport points, during April, 1942.

Stands for COORDINATION

TWO years ago we looked at air cargo from a theoretical standpoint and such conclusions as could be reached were then based on theory and not facts.

In those two short years both motor carriers and those interested in air transport have had the benefit of numerous practical demonstrations of the carriage of air cargo. Their thinking, therefore, can be based on actual facts, limited though they may be, and increasing soundness in calculations and predictions have resulted.

In many respects, as spokesmen for air transport have stated, there is a natural affinity between the two forms of transport, by air and by highway. As indicated in studies made in this interim period by the Civil Aeronautics Board, air transport like motor transport is being plagued with growing conflicts in laws passed by the different states with respect to structural specifications and other safety factors as well as with duplicate taxation applied to air lines in interstate operation.

Motor Experience

These spokesmen for air transport have repeatedly pointed to the logical coordination that must come between the air cargo operations and motor freight carriers. They not only have made these statements, but it is notable that many of the air lines in creating staffs to work out arrangements for, or actually to handle, air cargo operations have drawn on people with motor carrier experience to head these units.

At the same time that we have this similarity, however, we find a fundamental difference in the two



Bachrach

By JOHN V. LAWRENCE

Managing Director

American Trucking Assns., Inc.

forms of transportation. In Dec., 1944, in Chicago, at the National Air Cargo Conference sponsored by the Society of Automotive Engineers, spokesmen for air cargo interests made the fact clear that whereas the aviation industry finds roughly 20 lb. per cu. ft. to be the average density of packed merchandise freight, present-day planes could not safely or economically transport freight of greater than some 4 lb. density per cu. ft.

In other words, relatively light and relatively small articles bearing high rates were indicated as probably being for some time to come the ideal air cargo from the standpoint of the airlines. On the other hand, light freight of comparatively great bulk or articles of exceptional value in relation to size have long been problems besetting the motor carrier.

Our imaginations have been excited with the great job done in World War II by our Air Transport Command, in carrying cargo by air not only throughout our own country but to overseas destinations in almost every part of the world.

In 1942, 1943 and 1944, domestic air transport handled 103,914,981 ton miles, while foreign transport rang up 603,137,283 ton miles during the same period.

Of course, we must remember that this was "must" transportation, where speed of delivery was vital and where the cost of carriage was of little or no consequence.

In the Dec., 1944, Air Cargo Conference at Chicago already referred to it was significant that aviation industry leaders went to some pains to explode rosy visions of a gigantic nearby growth of air freight transportation in which virtually everything but steel ingots would move at high speed by air. These men were practical, hard-headed businessmen, mindful that in aviation developments the dollar mark must be a major consideration. The picture painted by them was of a comparatively restricted field in which transportation of cargo by air would be profitable.

Transport Planes

To illustrate their point, they called attention to the fact that in 1939 only 2.3 DC3 transport planes would have been required to haul all of the airmail and express originated in that year. In 1943, they said, this total would have risen to 30 all-cargo planes necessary to carry all of the air express and airmail. Their obvious conclusion was that there must be a phenomenal growth and demand for air cargo transportation before more than a mere handful of airlines can hope to become at all important from a freight traffic standpoint.

On the other hand, experience gained in the operating field by the

(Continued on page 91)

Design for Motaircargo



IN the battle to make motair-cargo more efficient and more economical, the industrial designer is the liaison officer between two allies in the transportation field; the airline operator and the motor carrier.

His duty is to integrate the design of the airplane with the design of the motor truck in such a manner that the flow of merchandise from feeder truck to cargo plane to delivery truck becomes, as nearly as is possible, a continuous operation.

Fortunately, most individuals concerned with motaircargo have been cognizant of this problem in design for some time. Great strides have been made in the direction of complete coordination, and even now, greater strides are being planned on the drawing boards of industrial designers.

The fundamental problem, of course, is the standardization of truckbed and plane floor heights. That this standardization will be achieved is indicated by the design of the Fairchild Packet cargo plane, the floor of which is level with the height of the average truckbed.

Height Standards

However, we should consider two factors in our discussion of height standardization.

1. We have on hand a large number of military transport planes which must be converted to civilian use if the taxpayer is to receive any

benefit from the disposal of war surpluses in this category. These planes, in most cases, have slanted floors which are above truckbed height.

2. Some manufacturers, for aerodynamic reasons, may decide that it is impracticable to standardize truckbed and plane floor heights in the immediate future.

To utilize cargo planes of these types efficiently we must have an automatic method either of raising the truckbed or of lowering the plane floor. At present, many small trucks are so constructed that the floor can be raised, by means of a hydraulic lift, to the level of the plane's cargo door. This arrangement is more satisfactory for the loading and unloading of small, rather than of large cargo planes. The payload of this type of truck

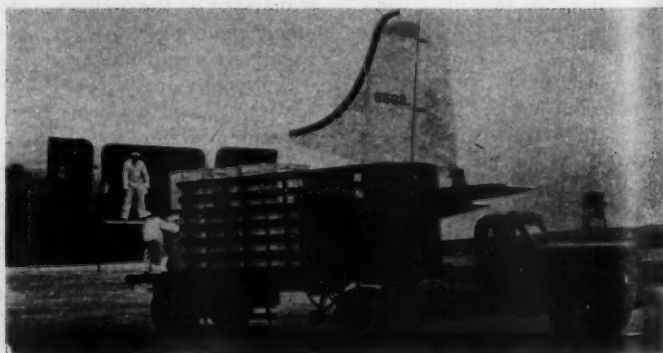
will always be relatively small, because of the weight of, and the space required by, the lifting equipment.

Slanted Floor

Within its limits, it is felt that the efficiency of this type of truck could be increased if the truckbed, when elevated to plane floor height, could be slanted, so that the force of gravity could be used to facilitate freight handling. The level of the truckbed could be regulated by a hinge device now available.

Greater benefits, however, seem to be offered by the possibility of lowering the plane floor. The plane floor could be hinged at the rear, and lowered to truckbed height from the front end. Since the floor would drop out of the fuselage, it could be loaded simult-

INEFFICIENT HANDLING INCREASES COSTS . . . Although the cargo door of the plane above is large enough to permit efficient loading, an obvious disadvantage is the fact that plane floor and truckbed are not the same height. In addition, manual, rather than mechanical, handling is employed. Contrast this with picture at right.



By MARTIN ULLMAN, Industrial Design Consultant

More efficient and more economical distribution will be materially furthered when the design of motor trucks is integrated with the design of cargo planes to such an extent that the transfer of goods from truck-to-plane-to-truck becomes a nearly continuous operation.



tanously from three sides. Once the floor was loaded, it could be lifted back into the fuselage by means of separate mechanical equipment.

Shipper's Problems

Even under the optimum conditions of synchronized design, motaircargo will not reach its full effectiveness as a means of transportation unless proper consideration is given to containers. Here again the industrial designer can help, because he is conversant with the problems of the shipper and the capacities of trucks and cargo planes.

Eventually, all planes may become "flying boxcars" of rectangular shape. Until that time, it would be wise for cargo airline operators to furnish shippers with floor plans

of plane interiors, and with suggested methods of packing to utilize all available space. If such floor plans were furnished, a shipper using planeload space could, with the aid of his packing expert, plan to make use of the narrow or curved storage space found at the extremities of many present-day cargo planes.

Many standard shipping containers in use today, although they may have the required strength, are not light enough for economical adaption to air cargo.

In many respects, the construction of an air cargo container may be compared with the construction of a bridge. Both bridge and container must be stronger at some points than at others. The engineer solves the problem of the bridge, and the industrial designer

solves the problem of the air cargo container by placing the strongest and heaviest supports at the points of greatest stress.

In many instances, it is possible to save space and money by redesigning the air cargo container. Let us consider the case of a manufacturer of men's hats who was shown how to "cash in on his container" through the application of industrial design.

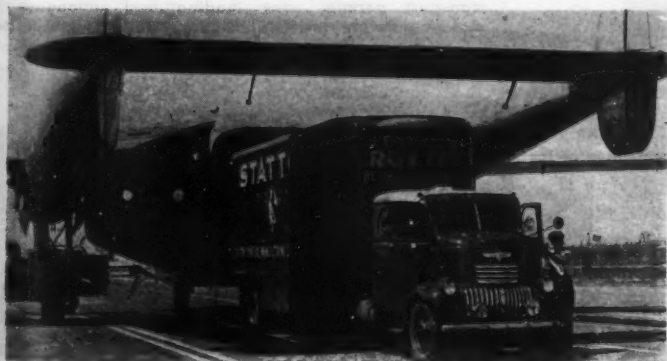
It was customary for this manufacturer to telescope three hats into a regular hatbox, and place four of these hatboxes into a shipping container. When the hats were received by the retailer, the hatboxes were thrown away, and the hats were placed on stock shelves. Because only 12 hats were packed into a rather large container, this manufacturer considered motaircargo an expensive method of transportation.

Wasteful Packing

It was later demonstrated that the system of packing, rather than the means of transportation, was expensive. The shipping container was redesigned to accommodate 36 hats, and the four inner hatboxes were eliminated entirely. The expense of building holding fixtures into the container was compensated for by the money saved through the elimination of the hatboxes.

The manufacturer profited by
(Continued on page 102)

EFFICIENT HANDLING DECREASES COSTS . . . The floor of the Fairchild Packet, shown above, is of standard truckbed height. This permits continuous movement of cargo from truck to plane, and from plane to truck. Mechanical handling equipment can be driven between truck and plane over a level metal bridge plate.



Coordination of Air

By HAVILAND REVES, Special Correspondent

MUCH recent discussion of air cargo has tended to treat it as an entity in itself, instead of conceiving of it merely as one phase in distribution. Aside from the preceding and following distributive processes, air cargo is actually only one step in transportation, and it must develop in close coordination with surface transport. Cargo planes commonly take their loads from trucks, and they deliver them to trucks. The plane is directly dependent upon highway transport for revenue freight.

A survey of recent developments in the cargo plane field indicates little probability that the air transport will be able to get along without the land carrier in other than isolated instances. Direct loading dock pickup and store-door delivery by planes seems out of the question in the near future.

Attention has been centered in this connection on the helicopter. However, a helicopter capable of operating over city streets safely and efficiently would probably be

too small in size to carry a worthwhile payload of any but the most valuable types of merchandise.

Air transport is welcomed by far-sighted truckmen. Robert F. Black, president, White Motor Co., and chairman, motor truck committee, Automobile Mfrs. Assn., has said "We have no fear of air transport. Whether it takes business away from other carriers or not, it is certain to develop new business both for itself and for the others. Its competition will be a spur to land and water carriers."

Critical Problems

It is at the point of coordination with motor, or, to a lesser extent, rail and marine carriers, that the most critical problems in the field of air cargo arise today. Strangulation is possible through the erection of high economic barriers which can force air cargo to remain a high-priced specialty form of distribution. On the other hand, widespread adoption of American principles of free enterprise can encourage its growth. Coordination

of air and highway cargo operations is far as significant today as is any development in air cargo alone.

Getting the truck load onto the plane, and the plane load back onto another truck is one test of coordination.

A number of airlines are now using a plan of coordinated ground pickup and delivery in connection with regularly scheduled shipments of merchandise. Transcontinental shipments have ranged literally from carrots to grand pianos.

Fruehauf trailers of various designs are being used as the ground carrier in a number of cases. Ralph E. Meyers Co., Salinas, Cal., has been shipping produce by air for several months. Produce is transported on a flat-bed trailer from field to packing plant, and from packing plant to plane. Trailers are used which have a cargo capacity equivalent to that of one airplane.

The produce shipments are loaded onto a Consolidated-Vultee 4-engine transport operated by American



LEFT: A huge airplane engine is loaded into the hatch of a Naval Air Transport Service cargo plane. The motor was rushed from factory to field by motor truck.

BELOW: The wide cargo door of this Western Air Lines transport permits easy loading and unloading, and makes possible the use of large palletized unit loads.



Air and Highway Carriers

It is at the point of coordination with motor carriers that the most critical questions in the field of air cargo arise today. If it is to develop its full potentialities, we must solve the problems of getting a truckload into a plane quickly, and of getting a planeload onto a truck with less manual handling.

Airlines. This type of plane contains two features which are extremely important to coordination at the point of handling. One of these is a large cargo door, which slides back like a railroad car door, allowing full width for entry of freight. This permits easy transfer of large units from truck to plane.

Minimum Handling

The second feature of this plane is the interior floor level. This is close to truck height, although somewhat above it. The difference is small enough, however, so that the truck can be backed up close to the plane door, and goods loaded or unloaded with a minimum of lifting or lowering.

(Editor's Note: For additional information about efficient methods of loading and unloading air cargo, see "Motairhandling," p. 38.)

The problem of floor level is an important one which has been overlooked in much motair cargo planning. Passenger planes are familiarly high off the ground at floor

level. Various types of cargo planes, such as the DC-4, have been developed in which floors are lower. Even in these planes, however, the floor level is above truckbed height. Coordination of these dimensions must be achieved in order to obtain maximum reduction of handling costs.

Interestingly enough, aviation designers are working upon the development of small passenger planes for feeder lines, from smaller towns into the major cities on the main airline routes. These are to be "mixed" planes, carrying both passengers and cargo.

It is the general feeling, however, that the bulk of air cargo shipments will be handled by larger planes of the Conestoga type, or the Fairchild C-82, rather than by smaller models.

Coordination of air and highway transportation will be influenced by the types of cargo handled. One significant development of the past

three months has been the release of Goodyear's pliofilm, a moisture-proof wrapper. It has been used in connection with experiments conducted by Wayne University, under the direction of Dr. Spencer A. Larsen, head of the air cargo research department.

Oranges have been kept wrapped in pliofilm for 13 weeks without loss of moisture, and a special machine has been developed to wrap 400 oranges per minute, reducing the total wrapping cost to less than that of the present familiar paper wrap. A wrap of this type is designed to maintain the superior quality of air-borne produce until it is ready to serve.

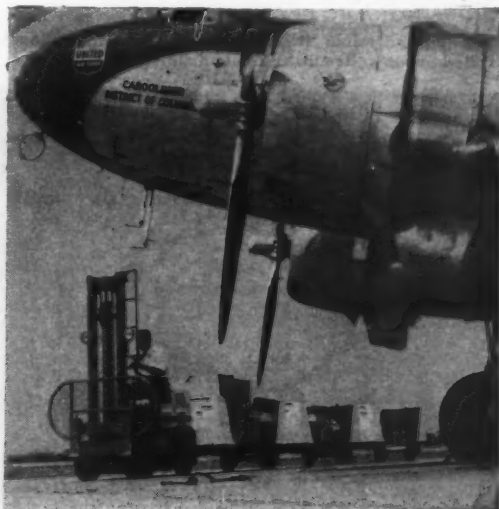
Packing Research

The problem of containers suitable for motair cargo remains a critical one. For that reason, research work and practical experi-

(Continued on page 138)

RIGHT: A train of pre-loaded cargo tubs is pulled by a four-cylinder fork truck. The loaded mobile tubs are lifted to the plane's cargo door by fork truck.

BELOW: Cargo is loaded into a Douglas DC-4 from a trailer. The trailer has a weight capacity of 10½ tons, which is the approximate payload of the DC-4.



Has War Taught Us Be



This shipper used an adequate export box, but neglected internal bracing.



War material was lost because small cases were crushed by larger cases.

OUR knowledge of packing and crating was put to the supreme test under the unusual conditions, of handling, storage, and shipping during the early war days of 1942. The results were not all good. Despite the extensive procurement experience of the Government, despite all of our vast industrial history and despite specifications calling for export packing and crating, waterproofing and preparation for long-time storage, the failure of the container to do its job with consequent damage to contents ran as high as 50 percent and more.

The first impulse of suppliers and distributors, when confronted with facts of mounting container failure, was to shift blame entirely to careless handling under war shipping conditions. This position was understandable. The best of then-known packing and crating methods were being employed. Presumably, they had sufficed in the past. Therefore, when a shipper was confronted with photographs showing his cases arriving at destination either externally broken

or with contents damaged from inadequate internal packing, in sincerity he said, "That's evidence of rough handling; no container will stand up if the box is thrown around by stevedores!" Industry was not alone in this reaction. Many men at military depot installations also closed their eyes to the possibility that older container methods were inadequate.

A False Premise

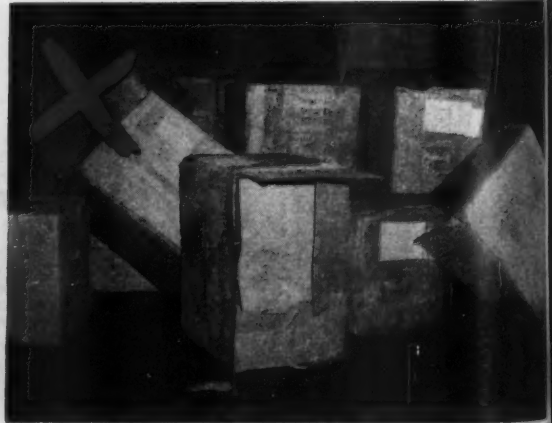
The assumption that all blame for case failure could be placed on transportation was based on a false premise. This was proven conclusively later, but only after a loss of some 18 months of precious time.

What gave us better packing and better container construction? Simple commonsense. We learned more about stresses and strains. We learned the value of greater adherence to size, type, and weights in lumber, nails, paper, strapping, etc., to fit the item being packed. There grew up an honest fear of moisture, of delicate, fragile parts, and of the crushing effect of other

The packer failed to allow for the springy effect of the coiled wire. Result: parcel disintegrated in the mails.



Although ordered packed for export, these containers did not stand the gaff of the domestic part of the shipment.



Us Better Packing?

The war has brought out one incontrovertible fact with respect to packing. The sphere of packing and packaging extends far beyond the drawing board of the packaging designer and the work of the packing and shipping departments. It extends from top management to consumer, and requires coordinated control all along the line. Packing is not an isolated incident. It is a link in the chain of distribution.



By MAJ. CHARLES A. SAPERSTEIN

cargo. One by one points of failure were overcome, improvements began to manifest themselves, and damage was reduced to a reasonable minimum.

2% Container Failure

No, container failures could not be blamed on the ports. It is true, inadequate containers will fail at the point of handling. But the handler cannot be blamed when there is no failure of the same item, packaged in adequate containers and handled in the same manner. As a matter of fact, despite increased volume and rush of activity, cargo handling at our great Army and Navy depots and at ports was on as high a qualitative basis as the best in equipment and supervision could provide.

If there is any lingering sus-

picion that the huge material waste allegedly resulting from poor packing and crating was caused by conditions beyond the manufacturer's or shipper's control, it will be dispelled when this rather surprising fact is revealed. *During the first two years of our participation in the war, from eight to 12 percent of all cargo received from suppliers had to be repacked by receiving depots or port agencies because of evidence of container failure or other packing inadequacy. Think of that! Hundreds of packers and craters right here in America were kept busy and away from other important work because cargo ordered from American industry on an export-packed basis, did not stand up even for its first and purely domestic shipment.*

(Continued on page 85)

MAJOR SAPERSTEIN has had unusual opportunities to observe and influence the packing and packaging of varied products under wartime conditions. For two and a half years he was in charge of the re-preparation for shipment of Army Air Forces material passing through the New York Port of Embarkation. He has seen virtually every type of packing failure, and has had to correct the mistakes of thousands of shippers.

In a series of articles written exclusively for DISTRIBUTION AGE, of which this is the first, he will present some of the principal trends, developments and changes in packing during the war as well as ideas which may afford industry a sound basis for incorporating among its packing and shipping practices some of the knowledge acquired from global warfare.

As Air Corps Packaging Control Officer for all eastern ports from Boston to New Orleans, Maj. Saperstein developed several special containers for export air shipment, and many of his ideas have been incorporated in packing specifications covering a wide variety of material shipped by air.

These corrugated containers, marked "waterproofed," were damaged by rain. All required repacking before shipment.

This crate has lost its rigidity because it was not sufficiently reinforced to carry the weight of a second tier.



Changing methods of transportation, together with increased use of motor-cargo, emphasize the need for more basic understanding of the importance of shipper's interest insurance to economical peacetime distribution.

THERE are many questions in the minds of shippers revolving around the prospect of a wider use of airplane and truck in postwar distribution, and its effect, together with that of new methods of packaging, upon insurance. Every company or individual owning or acquiring property should, when considering these transportation methods, keep three specific things in mind regarding insurance:

1. Should the property or merchandise be insured?
2. How should it be insured?
3. What will the required insurance cost?

"Why," asks the shipper, "should I insure my merchandise after it leaves my hands or premises and is given into the custody of carriers or individuals who assume responsibility through contractual arrangements?" The answer to that question is the fact that no matter how tightly the individual or firm transporting merchandise is bound by contracts, he is in no-wise bound by "acts of God." Occurrences such as floods, excessive wind storms, lightning, etc., are recognized by the courts as "acts of God," and not as "acts of man." Then too, even if a shipper's merchandise is damaged by the "acts of man" for which there is legal redress, with or without a contract,

it may require many months of effort and expense to recover damages to which he may be entitled. If, however, he is insured in a responsible insurance carrier, he will receive his damages in a comparatively short time, and can let the company worry about collecting damages from the carrier, through what is known as subrogation proceedings. It is mainly with respect to "acts of God" that shippers must protect merchandise by insurance, at a very nominal cost, with a responsible insurance company.

Damage Collection

In connection with the loss or damage of merchandise in the hands of custodians or carriers resulting from "acts of man," many situations may arise which can delay or prevent the collection of damages. There are many situations too numerous to outline in which losses occur through "acts of God or man," and which have in the past conclusively demonstrated that bills of lading are not insurance policies, and that nothing insures like insurance.

The type of policy used for insuring shipments is known as Inland Transportation, and attached to it are three types of endorsements or forms which set forth what is and what is not covered. These are known as:

By **CHARLES F. RUPPRECHT**

Associate Editor
The Spectator, Property Insurance Review

1. Transportation endorsement A.
2. Transportation endorsement B.
3. Transportation endorsement all risks.

The protection under forms A and B are outlined in what is known as a named peril basis. This means that the perils or risks against which a shipment is insured are itemized and clearly set forth.

The theft provision attaches from the time the goods leave the factory, store or warehouse at initial points of shipment, and thereafter continuously until goods are delivered at destination.

The risks or perils not insured against are fully outlined.

Form B is the same as form A and covers shippers who do not use water carriers (steamers), but who do use ferries, transfers, or lighters in connection with rail shipments.

The "all risk endorsement" is the most satisfactory form of insurance and means what it implies, that all risks of loss (disappearance) of, or damage to, merchandise is covered by the policy. This form holds the shipper free from any loss or damage that may occur to his merchandise with exceptions that are logical and not coverable.

(Continued on page 88)

Shipping Perishables

Air transportation provides the method needed to move perishable foods rapidly, safely, and economically from "winter garden" growers to millions of consumers.



By JOSEPH E. LOWE

Vice President and General Manager, L. & M. Warehousing Co.

PUBLIC opinion demands to know why, in this vast land of rich soil productivity, it is necessary for so many millions of the nation's citizens to be denied the full benefits of an abundant supply of fresh fruits and vegetables at their market places in winter, while, at the same time, great quantities of these health-giving and life-sustaining foods rot in the growers' fields, in freight cars enroute to market, or at market centers.

Public opinion also wants to know why the prolific crops of the all-year-round farms and truck-gardens of the south, the southwest and the far west cannot be brought to the market-baskets of the north and east in winter in less time, in greater volume and with more economy.

Forward Strides

Great strides forward have been made in production and nationwide distribution of nearly all other types of food. Our meat and meat products (fresh, canned and processed) represent a fine example, in normal times, of what planned production and distribution can do.

Flour, bread, baked goods, and prepared bakery products are distributed efficiently and economically. Distribution of other grains and cereals has been developed to within a practical point of perfection. Canning, freezing and dehydrating of fruits and vegetables has progressed so rapidly in recent years that the average man can see

little left to be desired from the standpoint either of production or distribution. Sugars, syrups, preserves, oils, fats, and seasonings are in ample stock throughout the country in all normal times.

Proper Distribution

Considering all that has been accomplished with other types of food, it is a sad commentary on our resourcefulness as businessmen that we have failed to solve the problem of planned production and proper distribution of fresh "winter-garden" fruits and vegetables.

In order to bring the manifold blessings of such production to every doorstep in America, and to furnish thousands of our returning veterans with lifetime, healthful jobs at comfortable incomes, we must have scientific crop planning and rapid distribution of crops.

Scientific crop planning and planting does not mean simply the processes of clearing and preparing ground, planting seeds, transplanting young plants, cultivating, weeding, and in other ways, just following the dictates of an area crop calendar. The difference between abundance or want, feast or famine, lies in whether or not a well-rounded, orderly planning system has been used.

The second and certainly the most important objective of our program to furnish "more food for more people" concerns the transportation and these vital foodstuffs. Air transportation provides the actual machinery needed to move these foods rapidly, safely and eco-

nomically from the "winter-garden" truck growers to hundreds of points throughout the nation.

The following ideas on how to develop an ideal air transport service for winter fruits and vegetables are the direct result of rather wide experience which the writer has gained over a period of many years in the land and orchard development business in various parts of the United States. Wherever I have sold land for fruit or winter vegetables production, I have considered it part of my responsibility to assist the farmers and growers to develop a well balanced production schedule, and to do everything possible to help them find a ready and profitable market for their produce. Certain, definite and proven ideas have been of valuable help to those growers who would listen and learn. There are three things which we must do if we are to succeed in accomplishing our purpose. We must:

1. Build airports and cool warehouses in central markets.
2. Build air produce loading terminals at reduction centers.
3. Create an air transport service throughout the country between terminals.

Large Airports

Every city in America with over 100,000 population should be equipped with an airport of sufficient land area to furnish ample landing space for medium or large transports, and for buildings to accommodate a modern, cool, produce warehouse and market center. Ter-

(Continued on page 87)



Reduce "Hidden Transportation Costs"

↓ with

AMERICAN AIRLINES'

INTERNATIONAL AIRFREIGHT

• You can increase profits and eliminate unnecessary operational losses by reducing "hidden transportation costs" through planned use of American Airlines' International Airfreight.

Don't be misled by simple comparisons of point-to-point charges among the various means of shipping. Low charges for hauling do not always mean most economical and most profitable method of transportation.

By utilizing air speed with Airfreight, shippers and recipients, in many diversified businesses and industries, are paring down "hidden transportation costs" and at the same time building new profits on new marketing and merchandising. Airfreight delivery reduces cancellations, elimi-

nates markdowns on seasonal and style merchandise and cuts losses in transit. It can also whittle down storage costs, reduce inventories, help maintain production schedules and afford savings in packaging.

What's more, this swift, economical air service can help you extend markets and build customer good will.

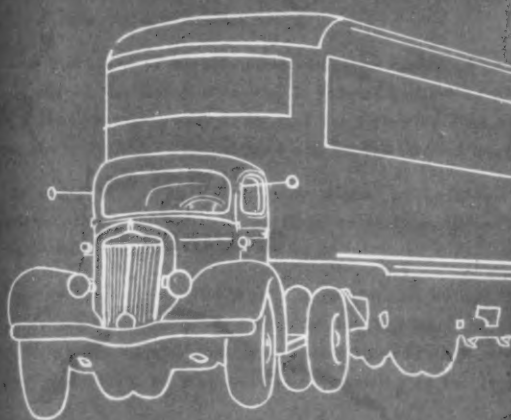
Our Airfreight sales engineers and Airfreight research staff are on hand to help you determine specifically how Airfreight can work for your benefit.

For complete information, write now to Airfreight Division, American Airlines, 100 East 42nd Street, New York 17, N. Y.

AMERICAN AIRLINES *System*

THE NATIONAL AND INTERNATIONAL ROUTE OF THE FLAGSHIPS

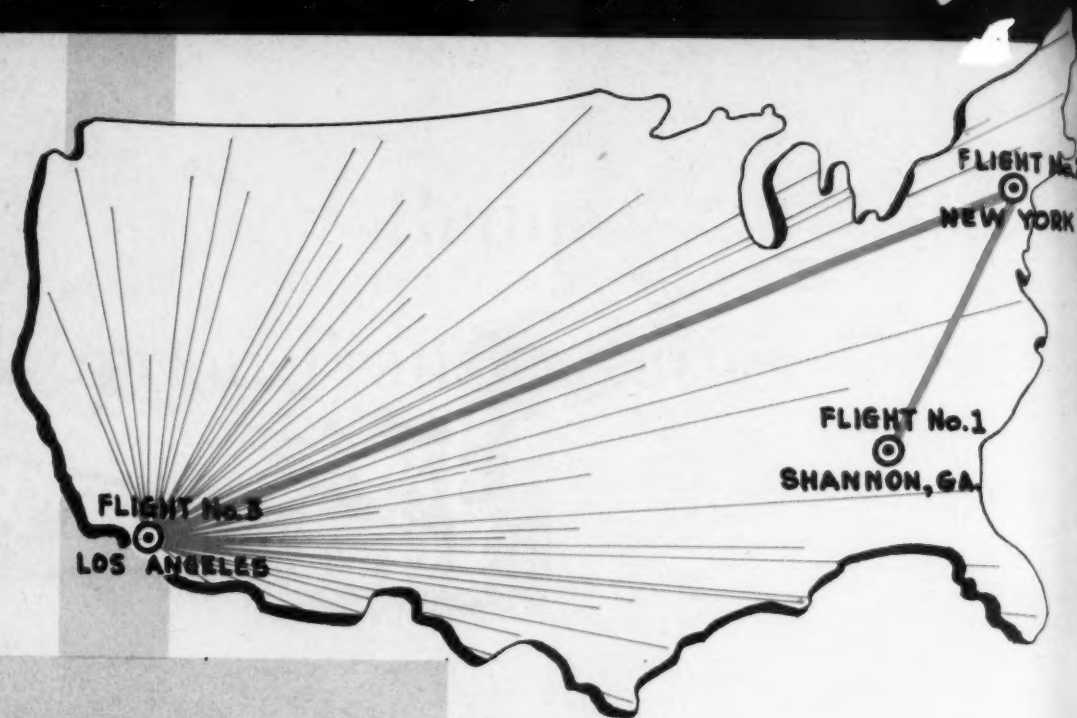
Motaircargo is Here



COORDINATION of air and motor cargo operations can benefit every phase of distribution. Better air-highway transportation will hasten improved service by other carriers. Air and motor cargo coordination can help make distribution more efficient and economical because the things that will make air-highway coordination practicable are the very things that will make better distribution possible. Among these are: more scientific design of products, containers and vehicles; standardization of packing and shipping practices; increased use of mechanical handling equipment; simpler freight tariffs; new marketing techniques; modernization of warehousing; better insurance coverage and faster capital turnover. Motaircargo is here. Its future is limited only by the limitations that men impose upon themselves.



The Flight of Fashion from



Plane was loaded with 21,000 yds. of greige goods.



The bolts were stowed in cargo bins.



Printed fabric was flown to Hollywood.

on Coast to Coast

ONE morning last Spring, trucks rolled into an airport near Shannon, Ga., with bolts of textile fabric and backed up beside a great silver cargo plane of the American Airlines. In a short time, the plane was loaded with 21,000 yds. of greige goods, a product of the Brighton Mills. The motors roared, the plane taxied to the runway and took off in soaring flight for New York, 828 miles away.

Four hours and 48 minutes later the plane landed at LaGuardia Field. Trucks rushed the material to Rencir Fabrics in New York to be printed with a transportation design. At dusk the following evening, the printed goods were trucked to the airport and loaded aboard another plane.

At dawn the following morning trucks at Lockheed Field in Los Angeles carried the finished yardage to Hollywood to be made into smartly styled summer frocks.

Twenty hours later, the frocks were shipped by air to 80 different retailers in all sections of the United States. The frocks, each on a hanger, were packed in special containers which assured their arrival at destination crease-free, so they needed no pressing at the store.

Thus, motaircargo accomplished in hours what formerly required weeks. Coordination of air and highway carrier operations means much to the future of distribution. It means time saving, a vital factor in modern economy; it means closer association between mill and converter, designer and retailer; it means smaller retail inventories, lower retail rentals, savings on interest costs of goods in transit and more scientific packaging at less cost.

Moreover, as J. K. Morrison, president of Brighton Mills, has stated, "American industry may have been nurtured on competition, but we have reached the stage in our national development where cooperation will serve better to keep us strong and vital. This series of flights proves that our best future lies in unity of endeavor."

Motaircargo and the coordination of air and highway carriers already is leading the way.



Special containers assured crease-free frocks.

Yesterday...

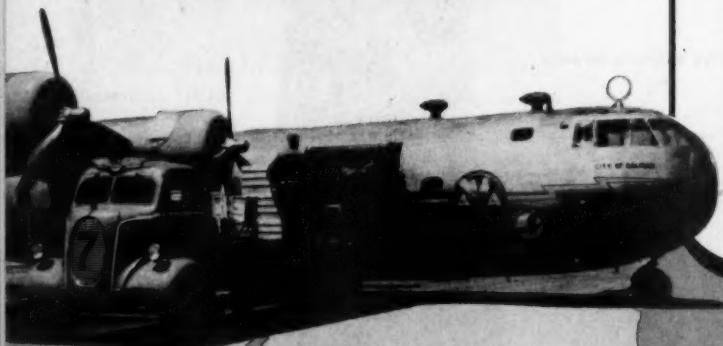
TO MARKET BY CALENDAR



Produce was ripened enroute

Today...

TO MARKET BY CLOCK



Tree or vine ripened produce reaches market in hours by motaircargo.

YESTERDAY, the great caravans of Mecca, Damascus and Baghdad moved slowly across the hot sands of the Syrian Desert. The heavily-laden camels traveled at the rate of about 30 miles a day, bearing jewels and spices, rugs and fabrics, fruit and grain and other merchandise of wealthy Oriental trading syndicates.

Today, cargo planes wing eastward from Los Angeles and San Francisco, or westward from New York, Boston and Pittsburgh laden with figs, dates and flowers from California, with lobsters and choice sea food from Maine, with jewels and precision instruments from the industrial east, with dress goods, millinery, periodicals and other merchandise of great corporations. The huge planes zoom across the North American continent in a matter of hours.

The difference between yesterday and today may be expressed in one word: mechanics.

Yet even in the ancient East, distribution involved many of the functions that we associate with it today: handling and transportation, packing and packaging, finance and insurance, warehousing and marketing, service and maintenance. The chief difference is that we use machinery.

They measured traveling time by the lunar calendar; we measure it by the clock. They used beasts of burden, we use machines. They handled materials manually; we use mechanical equipment. They used skins and matting for containers; we use fibre board and plastics. They used gold, silver and jewels for finance and insurance; we use cable or wire credit authorizations and drafts. They used caves and secret vaults for storage; we use fireproofed, air conditioned, scientifically constructed warehouses. They traded and haggled in crowded bazaars; we market our wares by radio and teletype, or in retail establishments more luxurious than the palaces of many Oriental potentates. They rendered no service or maintenance after a sale; we guarantee service and maintenance on consumers' goods for regular periods and, thus, help to secure replacement sales.

Yesterday, they did many of the things that we do today, but their timing was different. Yesterday, produce was ripened en route. Today, tree or vine ripened produce reaches market in a matter of hours because of motaircargo, the ultimate in modern mechanized transportation.



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© 1945 The Studebaker Corporation

"I've been crawling through town for hours and I'm just starting to roll!"

Isn't it time to do more than talk about congested city streets?

NOW that gasoline and other restrictions have been lifted, more cars, trucks and other vehicles are in operation in our cities.

That's good for local business, of course. But we must not forget that large share of the success of many local business depends upon getting shipments in and out of town via the cross country highways.

Private car owners can help

According to a government report, well over half of all traffic is on city streets and in the suburban fringes about the cities. And yet, highway improvements continue to get far more attention than busy streets do.

It isn't alone to the advantage of commercial transportation to have more room provided for vehicle oper-

ation in built-up areas. Congestion is an annoying and frequently expensive inconvenience for private car owners.

In many cases, state and federal governments have not been able to go as far as needed to effect urban traffic improvements. But America's millions of car owners, acting individually or concertedly, could campaign effectively for specific remedies.

Resurfacing and proper street maintenance, for example, would be a big help to traffic flow in most municipalities—even if nothing more could be immediately done.

Plans must be long range

As one of the nation's leading manufacturers of motor cars and motor trucks, Studebaker constantly makes every endeavor to increase the effi-

ciency of the vehicles with which it helps serve the public.

In fact, the very elasticity with which the automotive industry can adapt its programs to changing conditions is one reason why cars and trucks are usually more nearly abreast of technical progress than most of the streets and highways on which they roll.

It's highly important, therefore, in planning improved traffic facilities, to bear in mind that the need is for programs which are really long-range in scope, and not merely expedient.

Studebaker

**PIONEER AND PACEMAKER
IN AUTOMOTIVE PROGRESS**

For reprints of this advertisement in full color, while the supply lasts, address The Studebaker Corporation, South Bend 27, Indiana, U. S. A.

International Motaircargo

By **GEORGE F. BAUER**
International Consultant



In 1927 . . . Early strawberries being loaded into a KLM Fokker F-8 plane. Even in these days, there was coordination between airplane and motor truck.

COMMERCIAL air cargo for export, while limited to relatively small shipments and a variety of products in individual express packages, is beginning to show trends toward coordination with motor carriers abroad.

American Airlines, for example, arranges for delivery in its own trucks in Mexico of goods from the United States to consignees in Mexico City and Monterrey. It tends to rely on individual shippers to provide ground transport facilities when it comes to goods moving from Mexico to the United States.

As a result, air-borne products are carried to the air terminal in Mexico City and Monterrey by shippers in their own vehicles or in those available for hire.

There are several benefits from this integration of air and motor truck services in Mexico.

First, it allows for cooperation with numerous shippers, not directly in Monterrey or Mexico City, but in adjacent areas with which transport contacts are possible by motor carriers.

Then, too, there are feeder lines in Mexico which, with links between inland points and terminals of Pan American World Airways, American Airlines, and Braniff Airways, can supply cargo originating in other cities but sent by

Mexican airplane services to Monterrey, Mexico City, Vera Cruz, Merida and other cities, and expedited from these junction points by American-operated air carriers to airports nearest consignees in the United States. These Mexican feeder lines, in turn, depend on motor transport to haul cargo to and from airports on their systems.

Local Carriers

Another advantage of relying on local motor carriers to bring air shipments to the airports of American Airlines has been the assumption of work incidental to clearance of the exports through the Mexi-

can customs and payment of taxes thereon by the shipper.

Perhaps the best indication of likely coordination between airplanes and motor trucks in international trade in the future is obtainable from the operations of KLM, Royal Dutch Airlines, carried out prior to the war.

Today, it is customary for KLM to provide motor truck facilities for shipments involve many small packages and if the distances are small as occurs in the Dutch West Indies.

When larger shipments are involved the situation, even today involves coordination. KLM provides the air transport facilities and notifies the consignee by telephone of the arrival of his goods on the assumption that motor truck transport will be provided by the latter, either by means of his own vehicle or by common or contract carrier.

Before the war there was a

(Continued on page 88)



As long ago as 1926, KLM was shipping fresh vegetables daily from Holland to the London hotels. The plane is a single-engined, eight-passenger Fokker F-8 refitted as a cargo plane.



Surplus Planes and Trucks



By **ARNOLD KRUCKMAN**
Washington Correspondent

It is doubtful whether war surpluses in planes and trucks will seriously affect the market for these products. The cost of converting an army transport into a commercial airliner is considered prohibitive. Relatively few of the army trucks are considered bargains for civilian use.

FROM the beginning to the end of the war the Government has spent over \$46,000,000,000 for aircraft. A month or two before the Japanese quit, the Surplus Property Board reported that "more than half of the planes already declared surplus are unsalable. Measured in terms of original cost, more than three-fourths are unsalable. 'Off the record,' they will sell you here in responsible quarters, less than 10 percent of all planes made for all war purposes will be useful for any purpose after the war. It is generally assumed that less than 3 percent of the surplus 10 percent will be useful for civilian transport, passenger or cargo.

Agencies Unprepared

To put it in figures, the records show that, from beginning to end, American aircraft plants made 300,000 aircraft units for war. Apparently, the guess in the best informed quarters is that approximately 26,000 or 27,000 may be made useful for something, and need not be dismantled for salvage. The same rough guestimating leads to the conclusion that there will be about 1,000 transport planes which may be used by airlines to carry passengers and cargo. It is only fair, however, to record that all but the overall production figure, and the cost figures, are based upon tentative equations. The end of the Japanese war caught all Washington unready, and all agencies as yet are not quite in step with realities.

Stuart Symington himself, the new head and sole boss of the Surplus Property Board, reported, dur-

ing the middle of September, that the surplus flooding into the Commerce Department alone grossed something like \$100,000,000 to \$500,000,000 daily in original values. Surplus is being reported so fast that no one can keep abreast of it at this time. Symington himself does not expect that it will be possible to get a good grasp of more intelligible details until the first of the year.

Surplus May Be Dumped

There seems little doubt that most of the huge aircraft surplus will be dumped, after the aluminum, magnesium, and other metals, as well as engines and useful equipment, are salvaged. It is pointed out that the business of salvaging and scrapping the aircraft on a large scale will absorb the skill and energy of a large force of men; and that the aircraft, especially the combat types, take up so much storage space, that the salvaging and scrapping is urgent.

The significance of this scrapping and salvaging, from the standpoint of the Treasury, can be gathered from these rather incredible but nonetheless actual figures: three great war craft (stripped of some of their important equipment), which complete had cost a total of \$739,000,000, were sold for \$800 to schools. The schools use them as memorials and demonstrators on the ground. Four engines, which had a value of \$17,040, were sold to a school in Missouri for \$40. The Williamsport, Pa., Technical Institute bought a \$330,000 flying fortress for \$350, scrap value. The Institute will use it as a ground aeronautical laboratory. A soldier,

who operated a string of roadside refreshment stands before he went overseas, has arranged to buy a number of Liberators for a token payment. He intends to use them as lunch stands on a transcontinental highway.

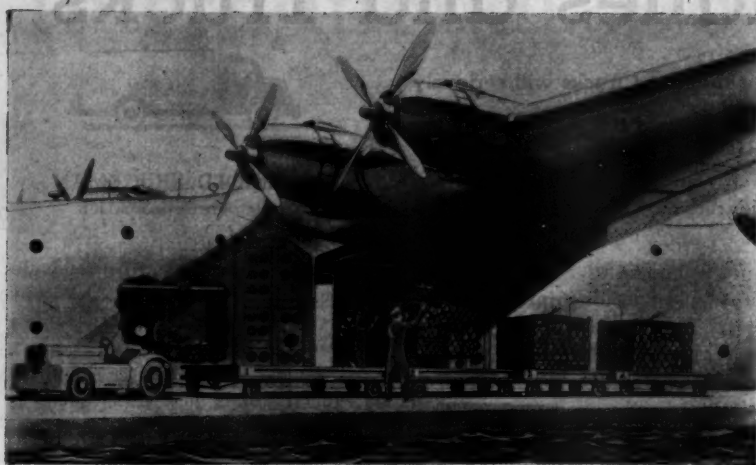
It has been found, to completely dismantle one of these great craft, actually costs \$3,200, while the salvage value of the parts total only \$2,400. For this reason none of the planes in the tactical aircraft class, including the heavy trainers, are expected to bring appreciable returns. They may be sold only with the permission of the Chiefs of Staff of the Army and Navy.

Possible Uses

There is expected to be some salvage in the planes which SPB classifies as personal aircraft, the single-engined four- and five-place cabin planes, and the light planes, "grass hoppers and puddle jumpers." Almost 10,000 have been sold, and are especially popular with veterans and with farmers. The farmers buy them to spot specific conditions in certain places on farms; and to do some tasks that can be accomplished quickly and thoroughly with equipment operated on the plane from the air. In the range country the cowpunchers are beginning to use them to round up cattle. In several places they have been converted into firefighting apparatus. At least two physicians use them regularly as ambulances and in making long-range calls. But above every other use it has been found they are in eager demand by small business enterprise which requires swift delivery facilities, and rapid service for clients.

(Continued on page 95)

Streamlined Air Cargo Handling



A STREAMLINED cargo-handling system has been devised for speeding vitally needed supplies to the Pacific occupation areas via 72½ ton Martin Mars transports, the Navy Department disclosed today. It is the first such system ever planned for a fleet of large flying ships operating on extended overwater routes.

Officers attending Air Transport School at the Glenn L. Martin Co., Baltimore, are learning how to apply the new system. By means of it, they say, the revised Mars with its huge new cargo doors and ample hull compartments can be fully loaded in an hour's time, and unloaded in half an hour.

Practical Method

Developed by the Naval Air Transport Service to meet a war-time need, the same cargo-handling method may provide the answer to a problem of practical concern for operators of large flying ships on global routes, now that peacetime commerce is about to resume.

Extremely simple and demanding no costly equipment, the NATS plan permits maximum utilization of Mars transport cargo space, and reduces to a minimum the time, paper work and manpower needed for loading and unloading. It as-

ures centralized location control over every item along the whole route from the United States to the far Pacific.

Load planning is the keynote, determining the handling of cargo from the moment of arrival at the warehouse, to the time it is actually in the plane and until it reaches its final destination. Except for specially tagged, fragile items, or bulky articles like jeeps and airplane engines, individual handling of pieces has been eliminated. Regular cargo is segregated by destination, priority and bulk, and is stationed on the plane with due regard for convenient access as well as for critical balance factors.

Checking and segregation of cargo is accomplished in a warehouse adjacent to the flying ship dock. Special non-stretch nets, with eyelets at the four corners, are spread on specially constructed, oblong wooden flats which constitute a breakdown replica of the airplane cargo deck. Cargo is loaded to a uniform height on the flats and tightly netted by means of a rope run through the eyelets, so that no movement of pieces occurs. Each flat has a number which is used for cargo control purposes.

When filled, every net is tagged by priority, destination and a number corresponding to the flat. It has been estimated that only two hours

The new air cargo handling method developed by the navy for loading the Mars flying ship may provide the answer to a question of practical concern for all operators of large air cargo planes now that peacetime commerce is about to resume.

is needed to check 30,000 lb. of cargo, containing several thousand items, from trucks onto flats.

All essential information, including flat number, priority, destination, weight and location in the plane, is graphically listed on several standardized, highly simplified forms. For practical purposes, the flying ship has been loaded on paper even before it arrives in port.

Cargo Hoist

Mechanical shop mules and trailers, rather than trucks, are used to haul the netted cargo shipside. The cargo-hoist built into the vast wing of the Mars picks up the nets and swings them into the main cargo compartment, leaving the flats behind. Three men, one working outside and two inside the plane, can easily load the entire flying ship.

In the fore and aft compartments, where the cargo-hoist does not extend, low-wheeled skates which are base equipment furnished with the plane can be used for moving cargo to the desired location. Removing cargo from the skates is facilitated by three evenly spaced rings imbedded in the ceilings, through which a block and-tackle may be placed. Tie-down fittings and specially designed non-slip lashing equipment hold the nets in place during flight.

(Continued on page 99)

EXIDES HELP TO KEEP MATERIALS MOVING SMOOTHLY, STEADILY, ALL DAY LONG...



POWER



Exide BATTERIES

Lifting and shifting, loading and unloading, hauling and stacking—the lowest materials handling costs are assured when unit loads are handled by electric industrial trucks.

When your electric industrial trucks are Exide-powered, you can count on *full shift availability* day after day. There is no costly down time, for Exides stay steadily on the job, delivering the same efficient performance during every working hour—a factor that makes Exide-powered electric industrial trucks the most economical of all materials handling units. When you buy an Exide you buy dependability, long-life and ease of maintenance.

Write us for a FREE copy of the bulletin "Unit Loads," prepared by The Electric Industrial Truck Association. It tells how to cut handling costs up to 50% ... covers latest developments in materials handling... and includes actual case histories.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

Airplane and Motor Truck . . .

Allies in Transportation

Fast ground service, intelligently coordinated with the speed of the air cargoliner, will give the shipper the rapid and flexible service he will need for certain high grade commodities. Executives of the airlines and of the motor carriers are making every effort to achieve the necessary coordination.

By ELSA GIDLOW

JUST about a year ago, flights of perishable California products were started. They were frankly described as experimental, experimental in determining the effect of this method of transport on the various products of which test movements were made to eastern markets, and also in discovering response of consumers to a price differential that would justify the added freight costs. The test flights helped to decide what the costs and prices would be; and, through these movements of a large variety of "vine and tree ripened" delicacies, the most efficient and economical methods of handling.

Today it can be written that the flying of California perishables to eastern consumers is no longer in the testing stage, but a regularly scheduled operation; and that these operations are due for expansion.

Editor's Note: For additional information about the shipment of agricultural products by cargo plane, see "Shipping Perishables by Air," p. 49.

At the same time, civic and business leaders, along with distribution and transportation men, are laying plans which they hope will make San Francisco as important as an airport as she has become a port for water-borne cargo. While shippers and air transport men are figuring on the most appropriate cargoes for air movement and the best handling techniques coordinating air and surface vehicles, the

San Francisco Bay Area Aviation Committee has given unanimous support to a \$20,000,000 bond issue to finance modernization and expansion of the San Francisco airport. San Franciscans will vote in November on this airport expansion proposal of the San Francisco Public Utilities Commission. If the voters approve the bond issue, as they are expected to do, the airlines have indicated that they are prepared to spend \$40,000,000 to \$50,000,000 on facilities and equipment for this area. The plans include modernized highway ap-

proaches to facilitate auxiliary truck feeder operations and equipment for efficient handling of freight between points of origin and the airports.

Modern Airport

Already San Francisco's "air harbor" is regarded as the leading commercial airport on the Pacific Coast. The proposed improvement according to the Bay Area Aviation Committee, will make it one of the most modern in the world.

At present, of the Airport's 2,300 acres, only 1,000 are developed. (Continued on page 103)

A truckload of California fruits and vegetables is being transferred to a Pan American Airlines cargo plane for shipment to eastern markets. Loading is made easier by the fact that truckbed and plane floor heights are the same.



How Public Warehousemen Can Help To Finance Airline Expansion



Where spare parts are mortgaged under a chattel mortgage they can be separately warehoused under the custody of a public warehouseman, or, better still, a field warehousing arrangement may be set up and the warehouse receipt used as collateral for a loan.

By JOHN H. FREDERICK
Air Cargo Consultant

It is predicted that the domestic and foreign airlines of the United States will need at least \$750,000,000 of new financing in the next five years. Their chief need will be for funds to buy new flying equipment. In the postwar period, if they are to carry the traffic it is predicted they will have by 1950, there must be equipment with approximately five times the seating capacity of the present fleets, to say nothing of cargo carrying needs.

The domestic airlines will require expenditures for flying equipment and spare parts of approximately \$300,000,000, and an additional investment in non-flying equipment, such as hangars, spare parts, communications and office facilities, of over one-third that figure. They will need additional working capital to cover these expanded requirements. Although the pattern of international air transport is not entirely clear at the moment, it is probably safe to assume that our airlines will spend another \$250,000,000 on their foreign operations, or a total of \$750,000,000 in all. Of this amount, it is estimated that about \$500,000,000 will have to be raised by borrowing or through the sale of stock.

Several very interesting problems in finance will arise when the airlines start out after these new funds. In a recent study of airline financing made jointly by the Bankers Trust Co., the Mutual Life

Insurance Co. of New York, the Chase National Bank, and the New York Trust Co., it was pointed out that the chattel mortgage, conditional sale contract, and equipment trust appear to be the most likely mediums for airline financing in the next few years. This is so because loans will be made on equipment and spare parts rather than on fixed property to any great extent. No airline now has any bonds of any sort outstanding and the nature of the business and the types of their assets will not soon lend themselves to funded-debt financing.

New Developments

The modern all-metal airplane does not wear out. Planes are constantly being rebuilt as a part of airline maintenance. The interest of lenders, therefore, centers on the question of obsolescence and the possible use of the equipment on the same or other airlines should the borrower default. An airplane requires about three years or more for development from its conception to its earning stage. New developments are taking place continu-

ously, but such developments do not come about at one time.

Turbine and jet propulsion, for example, may revolutionize aircraft power and eventually, either in conjunction with reciprocating engines or in substitution for them, render obsolete all aircraft now in existence or in the development stages; but a change of so radical a nature should not jeopardize loans on the proposed equipment if such loans are made for moderate duration. Furthermore, the reduction of such loans by regular amortization will be carried out while new types are being substituted for existing equipment.

Heretofore, loans on aircraft have been made in most instances for from three to five years. New large and specialized equipment will probably be amortized by the airlines over a longer period of time, perhaps up to 10 years, but in any event serial payments will doubtless be arranged so that 100 percent of loans on equipment will be returned within the period in which the airline writes the original book value down to whatever may be the allowed nominal residual value.

In case an airline should go into the hands of a receiver its planes would undoubtedly be operated for the lender by a receiver or trustee. In any event the owner of the equipment would be in a favored position in dealing with the receiver for the airline. If the airline was continued in operation, the question of disposal of equipment probably would not arise. However, in case of abandonment, the problem would be less easy of solution. As time goes on, each airline probably will select equipment to meet its specific needs. The days of the DC3 as uniform equipment on all airlines are decidedly numbered, and in such a case it would be necessary to find another airline operating under similar conditions and needing additional equipment, if a lender is to dispose of repossessed equipment without loss.

Bankers believe that an airline should have an equity of somewhere between 20 percent and 30 percent in its airplanes at the start, depending upon the type of equipment and the credit of the operator. However, it has been suggested that an airline's equity might be decreased if it were feasible to obtain a lien on spare engines, propellers, and parts. In any case, it is felt that a lender should insist on an adequate stock of spare parts to be acquired. This is so because an airline must use its equipment efficiently if it is to earn a profit. Such use can be brought about only when repairs can be made to major components without removing the plane from service, and this, in turn, requires an adequate supply of spare parts.

Value of Spare Parts

Depending upon the number and type of airplanes to be purchased and the length and kind of the routes involved, it has generally been found that somewhere between 10 percent and 20 percent of the cost of the airplanes themselves should be invested in spare parts. Spare part stocks include such items as extra engines, propellers, landing gear, and other physical components of the airplane. In addition, an airline should maintain its spare parts inventory in virtually its original condition through

American Chain Accepts New Members

Two new members have been accepted into the American Chain of Warehouses, Inc. John W. Terrelorte, executive secretary, has announced. The new members are Merchants and Mfrs. Warehouse Co., Flint, Mich., and Weicker Transfer and Storage Co., Pueblo, Col. Clarence F. Miller is president of the Flint organization, and R. V. Weicker is president of the Pueblo company.

all but the final stages of the life of the airplane.

Because of the importance of the spare parts inventory of an airline, bankers have given considerable thought to the possibility of obtaining a valid lien or other security interest in such assets. It has been discovered that the uncertainties existing under state law present a formidable obstacle to financing the purchase of spare parts in the usual way. In the first place, as the laws of the various states differ in many particulars, it would be necessary in connection with any proposed loan to examine the laws of each state in

which the airline's repair shops were located in order to determine the extent to which a valid security interest in spare parts could be obtained in the traditional manner and what financing vehicle would be most suitable. Furthermore, it is a general requirement that the property in which the security interest is held be marked or segregated, or at least clearly identified. But marking has been practicable only for airplanes and certain of the larger spare parts.

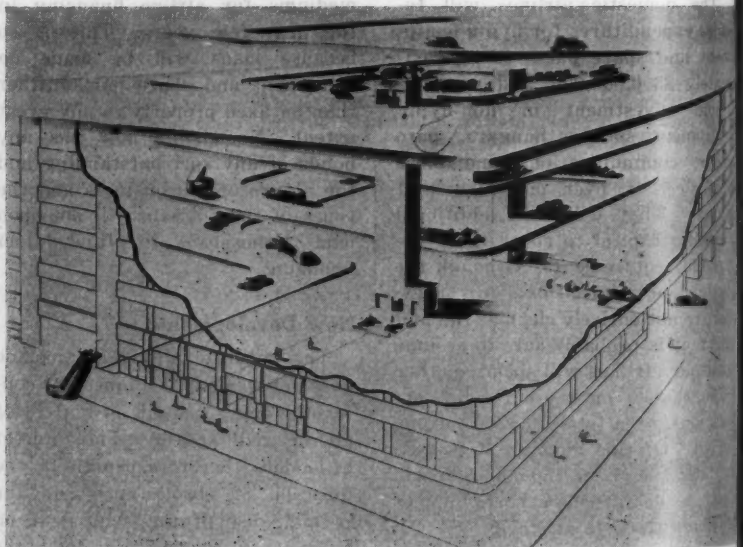
Field Warehousing

Here is where a well-established public warehousing service—field warehousing—can step in and solve the banker's dilemma. Where spare parts are mortgaged under a chattel mortgage they can be separately warehoused under the custody of a public warehouseman, or, better still, the usual field warehousing arrangement may be set up and the warehouse receipt used as collateral for a loan.

Field warehousing as it has been developed during the past 20 years

(Continued on page 101)

Terminal of Tomorrow



Heralded as one of the most revolutionary improvements yet to be introduced in industrial building design, the 32-ft. wide highway pictured here will run through the entire interior of the Interstate Commerce Center in downtown New York for a distance of 1/4 mi. Installation of these unusual facilities will permit trucks and trailers to drive directly from the street to the loading platforms on each floor of the 13-story building. The structure will provide more than four acres of space on each floor. Estimated construction outlay is over \$15,000,000.

EDITOR'S NOTE: This article concludes the author's commentary on the Interstate Commerce Commission's recent revolutionary decision on class rates. The first article outlined and reviewed the decision as a whole. Succeeding articles analyzed Parts 2 and 3 of the decision.

The authors have had many years of practical experience in traffic work. Mr. Elwell is traffic manager for a number of manufacturers and other shippers. He is a practitioner before the ICC and the U. S. Maritime Commission.

Mr. Elkins has a law practice in Washington, D. C., is traffic attorney for the National Petroleum Assn., and editor of "Digests of Rates by Pipeline." He has been an attorney before the ICC since 1919. Before that, he was employed by the Commission.

WHAT reasons impelled the Commission to require that all class rates be the same mile-for-mile? The question goes to the heart of the case.¹ The Commission is required to do justice to the railroads and the shippers. It may not impoverish the railroads to benefit the shippers. It must be fair to both. Its orders must be founded in reason and rested upon the facts in the record before it. The question is not concerned with the reasons which give it cause to make the order, namely, that the rates were unreasonable, unduly preferential to official territory and disadvantageous to all other territories. It seeks to know something of the facts upon which the Commission could rest its order requiring mileage rates as a reasonable and fair adjustment for the vast territory concerned.

Costs appear to be the answer. The costs of transporting a unit of freight, the Commission said, is substantially the same in all territories. It made no attempt to ascertain the costs of transporting the articles which move at class rates. It considered total costs, regardless of the kind of rate applied and of the type of equipment used, box, refrigerator, tank or live stock car, or gondola.

Commissioner Porter, in his dissent, remarks, that the majority says, "We are not basing actual

¹ Throughout this article we refer to: ICC No. 28300 Class Rate Investigation 1939. ICC No. 28310 Consolidated Freight Classification. Decided May 15, 1945.

The Class Rate Decision

No. 4—Cost Factors Involved

All shippers and consignees will do well to analyze their individual positions as a result of the class rate decision, with its many ramifications, as applied to their own problems of marketing and distribution.

By **HENRY G. ELWELL**
Traffic Consultant

and **HARRY S. ELKINS**
Attorney at Law

rates on cost, but are using costs to fix the rate relationships between the respective territories." (p. 286)².

Cost Studies

Cost accounting as applied to railroad transportation and the determination of unit costs is far from being an exact science. Estimates and assumptions are necessary. The courts and the Commission have been critical of cost studies, probably for that reason, and have ignored them or given them little weight. Ordinarily, they are said to be "little more than a very rough indication, and even if unusually comprehensive and exact, it should not be the sole basis for fixing rates. The value of the service to the shipper and many practical considerations may be of equal or greater importance." (p. 286).

The cost study upon which the Commission here rested its findings was made by its own staff after considerable research and study. When offered in evidence it was criticised, and corrections and readjustments were made.

² Indicated page numbers refer to those in the mimeographed sheets of the decision.

Studies of others were also offered, but the Commission says they were not better. Costs computed by its staff to reflect expenses of railroads in 1939 were compared with the actual expenditures, the figures in both cases including a four percent return. With satisfaction and in justification of use of the cost study the Commission says that the computed rates were the following percentages of actual expenditures: in eastern territory, 98.3; in southern, 100.3; and in western, 99.1. (p. 157). Unit cost of transportation is said to be about the same in all territories based on 1939 statistics, and using average costs for the United States as 100 percent.

Rate Comparison

There is "very little difference in the cost of furnishing transportation in the south as compared with the east, using figures for 1939, or from 1930 to 1939." If 1937-1941 tabulations are used, costs in the south are much lower. In the same period overall costs in western territory were five to 10 percent higher than in the east. In 1941, costs would be reduced to five percent or less. Less than

carload traffic is carried at a deficit in all territories, except possibly in the south. (p. 161).

If costs were less in the south, argued the southern railroads, with our higher rates, we should have earned a much higher rate of return than the eastern carriers, "but such is not the case." What figures the railroads used is not clear. The Commission said the true figures are otherwise. The southern railroads generally, it says, from 1936 to 1943 inclusive, earned from one to two percent more than the eastern railroads, based on net railway operating income and reported investment in railway property, plus cash, material and supplies (p. 185). In 1936 only did the eastern carriers earn a greater return.

Railroad Revenue

The southern railroads also argued that the composition or "consist" of the traffic is different, is of higher grade in official territory than in the south, and may be called upon to pay a greater share of the transportation burden. Railroads must obtain their revenue from the traffic which moves in the territory in which they operate and, therefore, unit costs may not safely be used in comparing costs of one region with another. This argument stresses contributions from manufactured products, which produces

for the eastern railroads more revenue than any other group of commodities. Products of mines are next in importance, and contribute to eastern railroads in excess-of-out-of-pocket costs, more than three times as much, relatively, in proportion to total income, as the group of products contribute to the southern railroads. Manufactured products, however, in each territory contribute a greater total. In relation to excess-of-out-of-pocket costs, they contribute 53.2 percent in the eastern district, and 50.2 in the southern district. (p. 183).

Commissioner Porter apparently thought that the majority gave too little attention to the differences in composition of traffic. He devotes almost as much space to it as does the majority. He says that the eastern railroads derive a large revenue from coal and iron and steel articles. Also, that the location of steel mills, with coal deposits near, gives to the eastern railroads a tremendous natural advantage.

He did not think as highly of the cost figures as did the majority. Commenting upon them, he notes that:

"The report does not show, except in nebulous fashion, that the cost figures represent apportionment of totals, based on estimates; that they involve many assumptions and acts of judgment; and are not computations from direct, original cost figures for particular move-

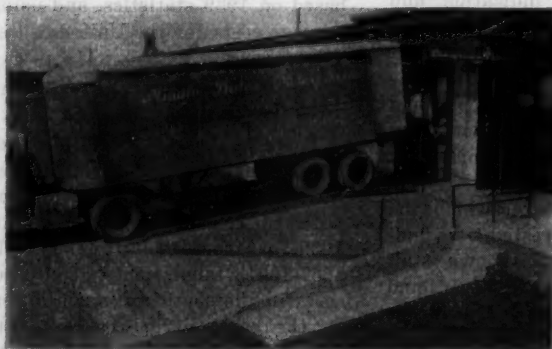
ments. These, however, are the facts. It omits evidence showing that 59 out of 117 items of basic data used in the studies were estimated, and that 458 of 500 sequences were wholly or partly estimated. It fails to disclose clearly that when making the studies it was assumed that the consist of the traffic is the same in the different territories, when the fact is, as I have pointed out, that the traffic consist differs widely in the respective territories. The result is that theoretical costs are produced, based upon assumptions which are not facts, and upon comparisons of unlike things."

Commodity Traffic

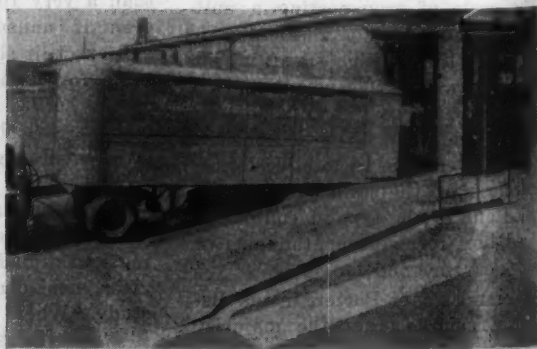
It is dangerous, he asserts, to use comparative costs to fix rate relationships. It is a policy, he says, "which is likely to plague this Commission for years to come, for it is perfectly plain that if a general cost study, such as the one upon this record can be and is used as a vehicle for forcing uniformity in class rates, the same study can and probably should be used as an excuse for forcing uniformity in all rates, exception and commodity rates included. Certain it is that the study has no more merit for the fixing of class rates or class-rate relations than it has for the fixing of rates or relationships on exception or commodity traffic. Would uniformity on all

(Continued on page 93)

Adjustable Loading Ramps



Speed and efficiency in loading and unloading motor carriers is increased by the use of an adjustable loading ramp which may be moved up or down by means of an electric-



hydraulic piston. The photograph at left shows a truck on the ramp at raised position being loaded by means of an overhead conveyor. At right, ramp and truck are lowered.

Joyce-Cridland Co.

COSTING HANDLING

No. 2—Unit Load Costing



By FRED MERISH

IN a previous article¹ we discussed a procedure for setting up a cost-finding system on handling movement, a sub-division of internal distribution cost. In this article, we complete the discussion. As stated, we are not attempting to offer a fixed system. We merely present a systematic approach to the subject, which you can use "as is" or adjust to your requirements. That is good accounting practice always. Never fit your business to a system. Always fit the system to your business. Now, to continue our discussion on costing handling movement from production termination to the next link in the distributive chain.

We assume that you have ana-

lyzed your handling operations and prepared a step-sheet to determine whether you will cost every major step in handling or use process costing. As stated previously, process costing is simplest where there is over-lapping of handling between the production and distribution areas or overlapping within the distribution area itself.

Say you have segregated all handling costs under "Distribution Cost" on your books and the figures for the first period have been recorded. A period may be any time, month, quarter, year, but monthly analyses are advisable. Say your books show the following distribu-

tion costs for the first month's handling operations:

TABLE 7

Load movement from production termination	\$1,400
Storage at plant	1,500
Shipping room preparation	1,750
Company truck expense	700
Transportation charges to distant company warehouse	600
Warehouse expense at distant point...	500
Transportation charges from this warehouse paid by customer so no costing required
Total	\$6,750

These costs are of limited use unless you know the cost of handling each unit moved.

In general, handling units fall into eight classifications:

TABLE 8

1 Bales
2 Boxes
3 Barrels
4 Bags
5 Tons or less weights
6 Palletized loads
7 Individual units
8 Miscellaneous

¹ Aug., p. 34.

THE costing of distribution from the time the product leaves the production line until it reaches the consumer is incumbent upon business men, and the sooner they get the job under way, the sooner we will have more efficient and more economical distribution. It is doubtful if even 10 percent of business organizations keep accurate records of distribution costs.

Bales comprise such units as cotton, bundles of tin plate, etc.; boxes comprise crates, wooden cases, fibre cartons, cases of bottled goods, etc.; barrels would contain lime, flour, paint; oil and may include rolls of newsprint because they are of similar shape, cylindrical; bags might contain coffee, cement, plaster, sugar, etc. Tons and palletized loads are self-explanatory and

"... Little intelligent research has been conducted with respect to distribution. No attempt has been made to find out why the costs of distribution are high, or whether these high costs are justified. The consumer, influenced by theoretical economists and government planners, arrives at the conclusion that he is not receiving full value for his money; that production is giving him a break, but that distribution is breaking him..."

might be the handling unit for many commodities; individual units may be an automobile or foundry casting; miscellaneous would cover any other item not in the other seven classifications, such as coils of wire, strip steel or rope, although some of these may also fall under the classification, individual units.

Some plants handle different units of the same commodity, as for example, a paint manufacturer may make roof paint in 50-gal. drums for the painting trade and in gallon cans, packed in cartons of one

"... Business leaders with vision realize that we have arrived at the stage where constructive action must be taken. Those who control the distributive processes must justify the cost of distribution, and integrate its various phases for economy. Otherwise, the government will be forced to enter the picture. Unless business men start now to counteract the trend, they may lose the opportunity to do anything about it at all..."

dozen for retailers. Other plants may make different products that require different handling units. There is no uniformity, but the application of unit costing to handling is a fixed formula for almost all plants and this is how it is done:

TABLE 9
Total handling cost for period—
(Table 7) \$6,750
Units handled—20,000 20,000
Cost per unit handled3375c.

You may break down this cost of each handling process or step shown under Table 7 merely by dividing the units handled into the cost per step.

TABLE 10

	Total Cost	Unit Cost
Load movement from production termination	\$1,400	.07
Storage at plant	1,500	.075
Shipping room preparation ..	1,750	.0875
Company truck expense ..	700	.035
Transportation charges to distant company warehouse	600	.03
Warehouse expense at distant point	800	.04
Total handling cost and unit cost	\$6,750	.3375c.

Flying Ice Box



Gardenias have taken to the air inside this Fiberglas insulated container cooled by dry ice. United Airlines recently flew an experimental shipment of the flowers from San Francisco to Chicago. The refrigerated container may be used to ship seafoods, medical serums, and certain kinds of fruits and vegetables.

Table 9 pre-supposes that production output clears all of these processes during the period and this is seldom the case. Output may be shipped to storage and stay there, only a part may be prepared for shipment during the period, then shipments may go to the distant warehouse and some or all stay on the shelves during the period so that load movement may cover 20,000 units from production termination but the same number of units may not traverse every step to the next link in the chain during the same period. This is just another of the complexities in costing handling and allowances must be made. We can only point out the condition.

The costing requisites needed to

"... The war has brought about so many improvements in production that production costs in the postwar period will be lower than in pre-war days, provided we maintain maximum output, as we must if we expect to employ 65,000,000 people regularly. On the other hand, nothing has been done to improve our civilian distributive set-up during the war; it is more snarled up than ever, and consequently it will become more costly than ever to the consumer..."

reflect these variances are up to the cost accountant in the plant. In general, the solution would be to tabulate units handled by each step in your handling routine, in this case, the processes under Table 7, and then divide the units into the cost.

Table 9 concerns the same type units throughout. If they differ materially in size, shape or weight, the handling cost per unit may differ and the cost sheets must reflect this variance. For example, the cost of handling 50 gal. drums of

(Continued on page 92)

"... Advertising men are always looking for different slants to get consumer interest. Distribution should prove to be hot copy because of all the talk going around about it. We feel sure that advertising men can construct a readable appeal, and do just as good a job in selling your distributive set-up as they do in selling your product prestige. Remember, though, to make your distributive system worth selling before you publicize it..."

LOOK WHAT
**PHILCO
"THIRTY"**
CAN DO
TO REDUCE YOUR PRESENT
MATERIALS HANDLING COSTS

To the safety, flexibility and operating economy of modern electric trucks — now add the 30% longer life of Philco "Thirty" Storage Batteries. Here's the combination that keeps materials moving — and keeps costs down. As proved by years of service on the toughest jobs, Philco "Thirty" lowers handling costs. Write for new catalog of specifications and engineering data.

The new Philco "Thirty" for electric industrial trucks is identified by its distinctive red connectors.

PHILCO
Famous for Quality the World Over

PHILCO CORPORATION
STORAGE BATTERY DIVISION, TRENTON 7, NEW JERSEY



Two-Way Radio For Trucks

In the future, when an important shipment has to be picked up by truck, the dispatcher, by using a radiotelephone will be able to transmit instructions to the driver instantly.

By A. B. CAVENDISH

ON the basis of experimental tests, two-way radio promises to have valuable applications to the dispatching and remote control of motor carriers. A forerunner of general radiotelephone operation adapted to about 5,000,000 trucks in the United States, the initial experiments of Standard Freight Lines, Inc., and Galvin Mfg. Corp., Chicago, have been carried out with signal success. It is expected that the Federal Communications Commission will act favorably on the recommendations for the experimental test program placed before it by the Radio Communications Committee of the American Trucking Assn.

Among the advantages of dispatching trucks by radio would be the ability of the home office to re-route a truck around washouts, detours and general storm conditions. Added to this is ease in dispatching trucks after they have left the depot, and while they are enroute. Many times important shipments arrive at the depot a few minutes after a truck has departed. A simple radio telephone call would catch the departed truck, and turn it back with little loss in time.

Radio Channels

At present the FCC has not assigned any specific frequencies for truck radio, but the proposed allocations include four radiotelephone channels for trucks in the 30-40 MC region, and four channels for fixed, or base operation in the 42-44 MC region. Both allocations are for highway freighter use. In urban



The entire radiotelephone unit is mounted on the floor of the cab in a position adjacent to the driver's seat. Here is the unit without covers.



The Motorola-Galvin radiotelephone installation within a Standard Freight Lines cab. The loudspeaker is placed under the roof, out of the way.



Here the unit is shown with the covers in place. Putting a seat cushion over these covers permits the radiotelephone equipment to be used as a seat.

trucking operation the proposed frequency allocations are included in 24 channels in the 152-162 MC region for general urban truck, bus and common carrier use.

Some of the initial tests with Motorola-Galvin radiotelephone equipment have shown that two-way truck radiotelephone communications can be maintained for a distance of approximately 50 mi., while communication from the fixed station or base to the truck can be heard from a distance of 80 mi. In the latter case, however, when the distance exceeds the 50 mi. limit, there is no communication from the truck to the fixed station. The talk-back distance may be increased by increasing the height of the fixed station antenna tower.

Remote Control

It is planned that locations of the fixed base stations will be outside city areas of electrical interference, and that the stations will be remotely controlled. Connection to the telephone lines, so that the ordinary phone on the dispatcher's desk may be all that is needed to talk with the truck, may be a possibility. The development of radiotelephone equipment has been brought to that point, and such an operation can now be accomplished by the use of an intermediate radiotelephone and PBX board operator.

The Motorola-Galvin radiotelephone is simple to put into a truck, and as easy to operate as is an ordinary phone. The controls are

(Continued on page 87)

The Professionalization Of Traffic Management

Part 5—A Tentative Plan

EDITOR'S NOTE: This is the fifth of six articles on the professionalization of traffic management by Dr. Frederick and Mr. Brewer. Part 1 emphasized the fact that the traffic manager must be a distribution specialist as well as a transportation expert. Part 2 dealt with regulatory legislation affecting traffic management. Part 3 discussed the duties of a traffic manager. Part 4 took up the subject of training for traffic management. Part 6 will consist of a recapitulation and prediction of probabilities.

PROFESSIONALIZATION may be brought about in several ways. One way is that followed by those who are prevented by law from practicing their profession until they have complied with certain educational and ethical standards such as have been set up for physicians, lawyers, clergymen, pharmacists, etc. Professional men like these render to their clients a service so personal that the public demands they meet certain standards before they are permitted to practice. Another way is followed by engineers, architects, accountants, and others, who serve the public in a semi-personal way and practice their professions without having complied with such rigid standards.

However, standards have been prescribed for most of these professions. Those who wish to comply therewith may do so. The provisions do not affect those in vocations who do not wish to comply. They may go ahead and practice their profession so long as they do not represent themselves as having been qualified. The language of

A national organization will do much to raise the position of the traffic manager. However, this will not do enough. There must be a steady and unrelenting perseverance to obtain legislation within the various states which will recognize and regulate a profession of traffic management by statutory enactment. Basic standards for a Certified Traffic Manager, also, will have to be established by a national organization.

By JOHN H. FREDERICK

Professor
Transportation & Industry

and WILLIAM J. BREWER

Research Assistant, Transportation
School of Business Administration
University of Texas

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the Supreme Court of Alabama, in *Lehman v. State Board of Public Accountancy*, which was affirmed by the United States Supreme Court, on appeal (U. S. 394, 44 S. Ct. 128), disposes of this subject as follows:

The rights of complainant in this case are unlike the rights of a physician, surgeon, dentist, lawyer, or school teacher to practice their callings or professions. Under the law, they cannot practice without a certificate or license; and when their license, or certificate, is revoked they are thereby prevented from practicing their profession at all. In the case of accountants, however, this is not true. They are not required to obtain a certificate or license to practice their calling, but obtaining a license, or certificate, is purely voluntary on their part. Nor does same, when once issued, bar or deprive them from further or longer practicing their chosen calling.

Professionalization of traffic management comes within the police power of the states in the interest of the public welfare. The courts have many times approved professionalization under this power which was very completely discussed in *Henry v. State*, an accountancy case in Texas, in part as follows:

The authority of the state government to place restrictions upon the exercise of lawful vocations is too well settled for controversy. *Den v. West Virginia*, 129 U. S. 114, 9 S. Ct. 231, 32 L. Ed. 623; *Rose's Notes on U. S. Rep. Revised Ed. vol. 14*, p. 565, *Corpus Juris*, vol. 16, p. 921, par. 431; *Dowdell vs. McBride*, 92 Tex. Rep. 239, 47 S. W. 424; *Ex Parte McCloskey*, 82 Tex. Cr. R. 531, 199 S. W. 1101. A great variety of occupations have been recognized as proper subjects for regulation under the police power. See *Corpus Juris*, vol. 12, p. 924, par. 432; 129 Am. St. Rep. 269 to 294. Professions or callings, demanding special

training, have frequently been held within the scope of the police power (*Dent v. W. Va.*, supra; *Douglas v. Noble*, 261 U. S. 165, 43 S. Ct. 303, 67 L. Ed. 590;) and such regulations are not inhibited by the 4th Amendment to the United States Constitution. The selection of subjects of such legislation and the means of regulation adopted are primarily subject to legislative decisions, and the presumption of validity and reasonableness obtains in a judicial inquiry unless the contrary is made to appear.

In 1936, the Supreme Court of Wisconsin was asked to pass on the case of *Wangerin v. Wisconsin State Board of Accountancy* (270 N. W. 57). The laws passed by the state legislature regulating accountancy were being attacked as unconstitutional, on the following grounds: (1) it is an unlawful and arbitrary exercise of the police power; (2) it delegates legislative and judicial power to the board; (3) it is an invasion of the rights to be free from unlawful search and seizure; and (4) it is class legislation. Some of the requirements of the accountancy law, contested in Wisconsin, are very appropos to the traffic manager and might be studied in formulating rules and regulations for a traffic organization. Among other things, the Wisconsin law provided that no person should be granted a certificate unless (a) he were 23 years of age or over; (b) fully passed an examination after having completed four years' high school course, or its equivalent, or have had at least three years' accounting experience or sufficient technical education, in lieu of certain amount of accounting experience. The law further provided that those who had been practicing accountancy for four years in the state, by making proper proof thereof, were entitled to a certificate without examination.

Court Decision

The Supreme Court of Wisconsin upheld the law as passed by the legislature insofar as it pertained to the above classification and stated that "if they are qualified, they may be licensed certified public accountants and take what they apparently regard as first rank in the profession. The statute might well have required all persons who sought to practice public accountancy to comply with the statute and

procure a license. The right to be certified as a public accountant is something in the nature of a privilege and recognition of an existing status."

If the profession of traffic management is ever to amount to anything, several things must be done by individuals and groups, such as traffic men and traffic clubs.

First, business must be told over and over of the importance of traffic management. Some poorly informed men in business have, unfortunately, very hazy ideas of the work of the traffic manager in in-

ALL of the numerous reasons which have influenced any group to organize for professional, promotional and educational work are present in the traffic field. Accountant's engineers, bankers, insurance men and others have found it to advantage to organize and develop the best interests of themselves and their calling.

However, the basic reason why professionalization is needed in traffic management is that it will establish and tend to maintain essential and uniform standards of practice everywhere in the United States. It will be another important step toward better standards and more efficient and economical distribution. It will tend to make the traffic manager a distribution specialist in every sense.

dustry. They are sometimes considered as self-glorified shipping clerks, whose duties end with the routine of shipments, and a few other similar elementary tasks. Unfortunately, there are traffic managers whose duties do not rise very high in importance; but the men who bear the titles of traffic managers, in many industrial corporations and commercial organizations, occupy positions of great opportunity and responsibility. The true importance of traffic management is recognized by the executive heads of large industrial and commercial enterprises, and smaller organizations are following the lead of their larger rivals. Many new traffic departments are organized each year and small traffic departments are being enlarged and strengthened. As Dr. G. Lloyd Wilson puts it: "Each traffic man

must 'sell' the idea of traffic management.

Second, traffic men must broaden their horizons and extend their knowledge of traffic practice, distribution economics and public utility law, in order to prepare themselves for larger fields of service.

Code of Ethics

Third, adequate instruction must be provided for those seeking to enter the field by the colleges, universities, technical schools, extension courses and correspondence courses.

Fourth, a high standard of ethics must be maintained.

Fifth, steps should be taken to regulate admission to the field, through the organization of a national body of traffic managers similar in organization, scope and purpose to the professional societies of accounting and the national associations of life underwriters and real estate managers. These latter groups have adopted a standard curriculum of studies for preparation, an experience standard, an examination for admission and a certificate which is issued to qualified members.

Sixth, there must be a steady and unrelenting perseverance by such a national society to obtain legislation within the various states recognizing and regulating the professionalization of traffic by statutory enactment.

If it appears desirable, in the light of the experience of other groups, to organize a professional organization in the traffic field, what steps should be taken?

In 1935, Dr. G. Lloyd Wilson, serving as chairman of the committee on education and research in the Associated Traffic Clubs of America, made a very extensive survey to ascertain the attitude of other organizations toward cooperation in a possible plan of traffic professionalization.

After having analyzed the fundamental principle of working professional organizations, Dr. Wilson outlined a procedure for the organization of "The American Institute of Traffic Management." Since 1935, Dr. Wilson's survey has received much publicity among the various groups interested in the

(Continued on page 96)

"Now you see it—Now you don't... *a Machine Shop in a Burma Jungle*"



Zero Strikes . . . and one of our bombers down in the wilds of Burma, badly shot up. Repair parts must be had at once! By land routes, it takes weeks or even months to get help in. But there's one chance . . . an S.O.S. for a flying machine shop. And presto! There is! A Curtiss Commando, equipped with a complete machine shop . . . from heavy drill presses to welding equipment . . . a huge

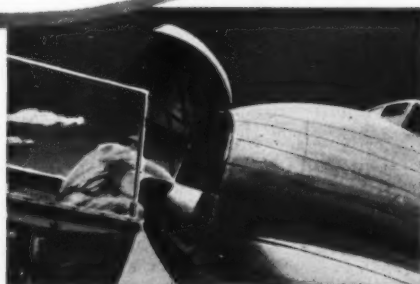
power plant . . . spare parts . . . and a crew of mechanics. In record time, all four engines are purring smoothly. The bomber is ready for another blast at the enemy. And the Commando is off on another rescue flight "somewhere" in the China-Burma-India theater. Here's one more reason why pilots say, "When it comes to carrying loads and getting there, it pays to Fly Commando!"

THAT'S WHY
I WANT TO WORK FOR
THE AIRLINES THAT WILL

Fly Commando!



Over Six Tons of heavy machines and men are handled easily by this flying machine shop. That means that the huge cargo holds of the airline Commando will be gold mines for cargo shippers. Perishables and high fashion clothes that arrive sooner and fresher by Commando . . . with twin-engine economy . . . will bring quick sales and high profits.



High Comfort is built right into the Commando! You'll enjoy smoother flying in the relaxable, double lounge chairs that line both sides of the spacious cabin. And for both passengers and cargo, the Curtiss Commando offers a real bonus in speed. It's faster than any of our present-day airliners!

On the Nose! Over-all speed of delivery is increased still further by the Commando's amazing accessibility for easy flight stop servicing. For instance, here a mechanic opens the nose cone access door by means of three quick-type fasteners. Through this door, he checks all units forward of the instrument panel quickly and comfortably.

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Commando

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Tomorrow's Great Airliner

Curtiss



Wright

FIRST IN FLIGHT



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The new Fisk Transportation Truck Tire is doing its part moving vital supplies, meeting tough schedules.

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Today, when tires must do so much, look to the Fisk Boy to keep your trucks rolling economically and dependably, meeting vital schedules — on time. Fisk Tire Company, Division of United States Rubber Company.

FOR MORE RECAPS
PER TIRE
MORE MILES PER RECAP... *get a* **FISK**

People in Distribution



MARKETING

O. Locher has been appointed president in charge of branches, Airmotive Corp., Glendale, Cal. In his new post, Mr. Locher has division over company branches in Glendale, Burbank and San Diego, Kansas City, Mo., Seattle, Wash., Anchorage, Alaska. Mr. Locher worked with Bredouw Hilliard Aero-engine Corp., Kansas City, from 1930 to 1937, and with Pacific Airmotive Co. since 1937. (Herr.)

Col. H. A. Stevenson, General of Corps, Army Service Forces, has retired to inactive duty and returned to his former business, distribution in the Michigan territory of Industrial Trucks, Tractors and Cars.

Appointment of D. J. Noland, as district manager, Wisconsin territory, headquarters at 2101 W. Purdue Milwaukee, has been announced Monarch Governor Co., Detroit.

Howard Hutchins, has resigned general manager, Malabar Machine Co. to become president, Chadkin & Co., Inc., manufacturers agents, Los Angeles, specializing in equipment for roads and general industry.

Dech Aircraft Corp. has announced appointments in departments directly affecting the company's commercial sales plans. An export sales department has been established, headed by E. S. Safford. W. Homer has been named public relations director, a position which includes direction of the firm's advertising.

Charles E. Dixon, Jr., formerly mechanical engineer, Turco Products, Los Angeles, has been named president and general manager, Kern division, Phillips Chemical Co., Chicago, with offices in Hollywood. The firm manufactures cleaning compounds, solvents, vapor deodorizing and industrial alkaline washing machines. (Herr.)

Selection of Bushrod Brush Howard as member of Board of Directors, Standard Oil (N. J.) has been announced. He becomes 11th director, following the retirement of Wallace E. Pratt.

A. Ashman has joined Atkins, & Co., Los Angeles, as a representative in the firm's domestic and foreign trade department and a specialist in industrial commodities used in the chemical, ceramic and steel trades. (Herr.)

Francis D. Miller has been appointed to the newly created position, Director of Sales Training, American Sales, Inc.

Howard F. Miller has been named manager, Petroleum Co. Tire Sales department, replacing William Sewall, now assigned to special duties.

Homer A. Size has resigned as manager, heating division, Western Ornamental Iron Works, Los Angeles, to assume the post of manager of Immersion Heating Equipment Co., Los Angeles. (Herr.)

C. L. Hamman has been appointed manager, advertising and sales market research, Columbia Steel Co., San Francisco. (Herr.)

Officers of Gair Santee Corp. wholly owned subsidiary, Robert Gair Co., Inc., are: George E. Dyke, president; T. W. Earle, Vice President in charge of wood and lands; Parker Newhall, secretary; T. Raymond Pierce, treasurer. New company has opened an office at Orangeburg, S. C.

C. Scott Fletcher, executive director, Committee for Economic Development, has announced the appointment of P. D. Fahnestock as CED director of information.

G. Webster Rice, widely known Philadelphia chemical executive, has been appointed assistant manager, Industrial Chemicals Division, McKesson & Robbins, Inc.

Joseph C. Cannon, C. T. Corp. System, Los Angeles, has been named California agent, National Skyway Freight Corp., a Delaware Corp. (Herr.)

Election of N. J. Clarke as senior vice president and J. M. Schlendorf, vice president in charge of sales, Republic Steel Corp., has been announced.

Walter E. Head, formerly factory manager, B. F. Goodrich Co. plant, Los Angeles, has been named factory manager, company's new tire plant, Miami, Okla.

John R. Carroll has resigned as Pacific Coast manager, American Hoist & Derrick Co., to become a partner in the firm of Harron, Rickard & McCone Co. Heading the construction engineering division, Mr. Carroll has established headquarters in Los Angeles. He has been succeeded at American Hoist & Derrick Co. by Harvey A. Mylander, with offices in San Francisco. (Herr.)

INSURANCE

W. R. Hall, former Royal Canadian Air Force Pilot, has been named manager, western department, United States Aviation Underwriters, Inc.

TRANSPORTATION

James J. Broz has resigned as traffic manager, Basic Magnesium Co., Las Vegas, Nev., and is now engaged in the practice of law in Los Angeles, specializing in transportation and public utility matters. (Herr.)

W. Sanger Green formerly passenger and cargo manager, has been named general traffic manager, American Export Airlines, transatlantic division, American Airlines System.

Appointment of John A. Smith as western traffic manager, National Skyway Freight Corp., has been made known.

Philip A. Amato, Akron, has been promoted to vice president, Federal Express, Inc., and is now in charge of the company's Indianapolis office. He was district manager of the firm for three months, and before that was with Caldwell Motor Freight, Inc., for nine years. (Kline.)

John E. Fay has announced the opening of Advance Transfer Company, Inc., intrastate motor common carrier with rights to cover the entire State of Connecticut. With headquarters at 1205 Main St., East Hartford, the new organization will operate with ample equipment and terminal facilities to perform a complete motor carrier service. (Donahue.)

Appointment of Robert M. Evans as district traffic manager, Braniff Airways, Inc. at Denver has been announced.

At the request of Colombia, a veteran United States railroad man has been assigned to work with Colombian engineers on rail transport problems, it has been announced by the Transportation Department of the Office of Inter-American Affairs. He is Herman D. Knecht, who spent 34 years in the engineering department of the Missouri Pacific Railroad. A specialist in transportation efficiency, he lately has been engaged in research and postwar rail planning.

Harry S. Pack, formerly director, functional engineering and air cargo developments, Pennsylvania Central Airlines, has become vice president, P. V. Engineering Forum, Inc., Sharon Hill, Pa.

Alonzo E. Norrbom, Los Angeles transportation and traffic consultant, has been named instructor, industrial traffic management courses, classes in instruction in transportation and traffic management, Los Angeles City Board of Education. Gabriel Bass has

been named instructor of the classes dealing with rates and classification. (Herr.)

Charles J. Daniels has been appointed traffic manager and Vernon A. Gilbert, operations manager, Great American Transport System, with headquarters in Detroit.

William C. Klebenow, formerly traffic rate expert, California Railroad Commission, and assistant secretary, Motor Truck Assn. of Southern California, has been named traffic manager, V. P. Hunt Co., with headquarters in Redlands, Cal. The firm specializes in freight service for the citrus industry, hauling citrus fruit, packing house machinery and petroleum products. (Herr.)

Appointment of Charles E. Leininger as Northwest and British Columbia representative, Reo Motors, Inc., has been announced.

Morley Drury, recently discharged from the navy, has resumed his prewar post as traffic manager, Pacific Freight Lines, Los Angeles. (Herr.)

O. C. Tharp, recently discharged from the U. S. Navy, has been named manager, Kansas City, Mo., zone for sales and distribution, Graham-Paige automobiles.

Port of New York Authority has announced appointment of George Gundersen, the Bronx, New York, as acting assistant traffic manager of the bi-state agency. He will assist Ed-

ward J. Laux, traffic manager, temporarily replacing Philip G. Kraemer, now in the navy.

Appointment of Joseph Gamburg as general manager has been announced by Air Clearance Assn., Inc., New York, organization of representative custom brokers and foreign freight forwarders affiliated with the New York Customs Brokers Assn.

At its annual meeting in Los Angeles, the California Council, American Institute of Traffic Management elected as president J. D. Reardon, traffic manager, Union Oil Co., Los Angeles. Other officers are: executive vice president, E. B. Johnson, freight traffic manager, Santa Fe Railway, San Francisco; secretary, B. E. Anderson, district traffic manager, Wells Fargo Co., Los Angeles; treasurer, J. R. McIntyre, general manager, Coast Carloading Co., Los Angeles. (Herr.)

John P. Wagman, Plainfield, N. J., has resigned from the State Department to return to the American Express Co. as assistant treasurer.

Richard S. Husted, manager, Curtiss-Wright Corp.'s office in Washington, has been named administrative assistant to William D. Kennedy, vice president and general manager of Wright Aeronautical Corp. Robert K. Brown has been appointed manager of the Washington office.

Numerous changes among officers

are announced by the Reading Railroad. They include: Joseph A. Fisher, vice president in charge of freight traffic, succeeding John W. Hewitt, retired after more than a half century of service; A. X. Williams, assistant to president, succeeding William Rhoads, promoted to assistant secretary and assistant treasurer; J. L. Smedley, assistant to vice president operation and maintenance; William K. Bean, comptroller, succeeding H. Whitehead, retired after more than a half century of railroad service; Arthur C. Tosh, assistant vice president, operation and maintenance, succeeding F. M. Falck, retired after more than 47 years service; N. B. Bailey, general manager. Major changes in the freight traffic department are: Harry B. Light, general freight traffic manager succeeding M. Fisher and J. Warren Lawson, freight traffic manager succeeding Mr. Light. Byron C. Cassel has been appointed general coal freight agent and Roger S. Wayne, coal freight agent.

WAREHOUSING

United Van & Storage Assn., Inc. in its recent annual meeting at Los Angeles, elected the following: president (re-elected) George W. Hovey, Fidelity Van & Storage Co., Los Angeles; vice president (re-elected) L. L. McAdam, Orth Van & Storage Co., Pasadena; secretary, Harold Equin, Lloyd's Moving Service, Los Angeles; treasurer, D. J. Plummer, Jr., National Van Lines, Inc., Los Angeles. Directors: B. F. Redman, Jr., Redman Van & Storage Co., Santa Monica; Wesley McKay, Beverly Hills Moving & Storage Co., Beverly Hills; Arthur Woolsey, Lyon Van & Storage Co., Pasadena; and Ralph Walker, Arlington Van & Storage Co., Los Angeles. (Herr.)

W. E. Dent, former general manager, Smith's Transfer & Storage Co., Washington, has been released from the coast guard and is back with the firm as assistant departmental manager of the service division. W. M. Wilson has been added to the staff of warehouse managers. (Toles.)

At a meeting of the board of directors, Terminal Warehouse Co., Philadelphia, Laurence T. Howell was named president of the company and its subsidiaries, Terminal Commerce Building, Inc., and Terminal Transportation Company, with offices at 81 Fairmount Avenue. Mr. Howell was formerly vice president of the company and succeeds the late Ernest V. Sullivan as president.

J. Leo Cooke, vice president and acting head, Lehigh Warehouse & Transportation Co., Newark, and the Lackawanna Warehouse Co., Jersey City, announces that one of the first moves in the companies' postwar expansion program, is the appointment of William J. Burns to a joint executive sales post serving both of the above mentioned companies.

Obituary

Thomas F. White, former president, White Exporting Co. of New York and during recent years active in the local development of the Good Homes Realty Company, of which he was a director.

W. D. Llewellyn, retired general manager, Railway Express Agency, 63. Mr. Llewellyn, who retired recently after 46 years of continuous service with the express company, started with the famed Wells Fargo & Co. in Dec., 1898, as a platformman, then became a driver, clerk, and messenger. Eventually, he was general manager of the northern dept.

Philip A. Vogel, 72, owner of the Vogel Cartage Co., which he had headed for 22 years.

Gustaaf Adolf Winkel, 73, importer and exporter of Curaçao, the Netherlands West Indies. He imported foodstuffs and exported hides, salt and Curaçao orange peels.

Joseph J. McCullough, 74, prominent in railroad circles and former division superintendent, Northern Pacific. He was a native of Desota, Ill. He had been with the company since 1907. (Haskell.)

John Weber, 50, traffic manager, Isthmian Steamship Co. He was formerly traffic manager, California Sanitary Canning Co. From 1929 to 1944 he was with Norton, Lilly & Co., steamship agents, Los Angeles. He joined the Isthmian Co.'s Los Angeles staff in 1944. (Herr.)

Richard Paul Ryan, official of two shipping companies. He was a partner in B. H. Sobelman & Co., steamship agents and stevedores, and a junior partner, Silberman Shipping Company. He also was director of the Port of Philadelphia Maritime Society.

H. R. McLaurin, 61, one of the pioneer figures in steamship circles in Southern California. He had been an active figure in steamship development at Los Angeles Harbor from before the days of World War I until a few months before his death. Prior to World War I, he was affiliated with the engineering division, Los Angeles Harbor department. Later he joined the firm of H. R. and M. F. McLaurin, steamship agents, exporters and custom brokers, Los Angeles. Mr. McLaurin also saw service with the Grace Line and with Interocean Steamship Corp. (Herr.)

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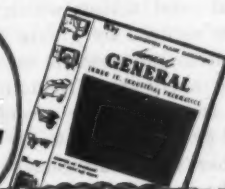
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Cost Factors In Distribution

If transportation costs can be reduced, overall distribution will become more efficient and more economical. Unfortunately, with a few exceptions, management in general gives no thought to the factors which make up the cost of transportation.

By HENRY G. ELWELL
Traffic Consultant

VICTORY in modern war is not won by chance. Successful military leaders take advantage of every detail. Victory is secured, in large part, by utilizing combinations of small things, which, added together, materially assist in building up the total overwhelming force necessary to defeat the enemy.

A similar constructive principle, using the combined forces of many minor things, exists in the field of industry, and it is available to management.

In an industrial establishment, lower costs may be obtained where serious attention is given to what at first glance may appear to be factors unworthy of notice. In this instance, we are referring to costs of transportation. The appreciable potential total saving which often could be secured by giving proper attention to the possible means of effecting many small reductions of costs, frequently is completely ignored by management. Or to put it another way, management often overlooks the fact that the careful scrutiny of transportation costs generally will result in drastically reducing the overall cost of distribution.

Many executives take it for granted that the cost of transportation cannot be materially reduced, or even that it cannot be reduced at all. They seldom stop to think about the various operations which make up total transportation costs.

Actually, most executives appear to believe the freight paid on inbound raw materials, or perhaps on outbound products, is the total cost of transportation as applied to their own business organization.

Cost Accounting

There are refreshing exceptions, but, in general, management gives no thought to what makes up the cost of transportation. Because of this attitude on the part of management, the average traffic department does not have access to cost accounting records necessary to provide for a detailed monthly analysis of such costs. Only management can correct this situation.

As the first step, management might well grasp the fact that the cost of transportation is divided into four major items, of which the first two are parts of production cost; and the other two are

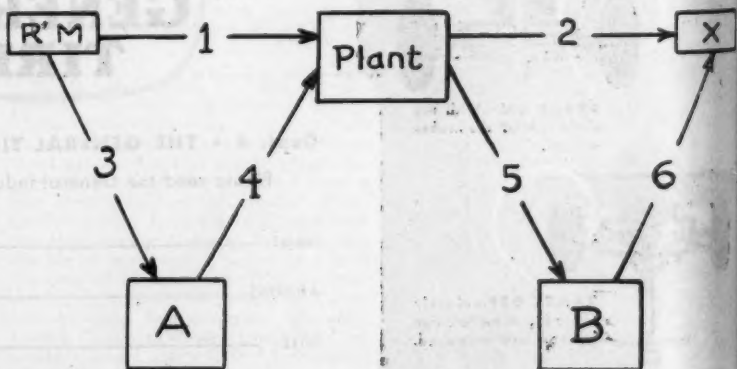
parts of distribution cost. The four major items are: (a) freight inwards; (b) materials handling inwards; (c) materials handling outwards; (d) freight outwards. When management insists that cost accounting departments provide these segregated accounts, the way will have been paved for a real study of transportation costs.

It should be kept in mind that the cost of transportation constitutes a part of the cost of distribution and that distribution has a twofold meaning:

(1) Overall distribution, which starts with the movement of raw materials at points of original source and continues until the finished products are in the possession of the ultimate users.

(2) Distribution as applied to the individual company, which begins at the point where the finished product is ready for sale, and ends when the product is in the possession of the customer. It is with this latter type of distribution combined with inbound costs, with which we are presently concerned. If costs of transportation for each single unit of industry are reduced, the cost of overall distribution is reduced.

(Continued on page 92)



Keep Motor Trucks Rolling

Through Preventive Maintenance and Wage Incentives—Part 2

By the GEORGE S. MAY BUSINESS FOUNDATION

A non-profit, fact-finding organization devoted to the interests of free enterprise

DRIVERS of many companies receive some kind of instructions before they start out on a trip. Too often such instructions are oral, or incomplete, or lacking in clearness. One set of condensed instructions for drivers is given herewith because of its directness and clarity.

Duties of Driver

The driver is responsible for all the equipment he handles on the road. His chief duties are:

1. To check oil, gas, water, tires, before leaving.
2. To check oil, gas, water, tires, every 100 miles.
3. To be thorough in making all scheduled road inspections, assuming

responsibility for all repairs, breakdowns, road failures, due to his own carelessness.

4. To promptly notify the office in case of accidents or unavoidable delays. In case of accidents, to obtain full details, names of witnesses, time, place, etc., and on arrival at destination to make full report to proper official.

5. In case of major repairs and subsequent delays, to notify office for instructions. In case of minor repairs, to have them made at nearest shop

and obtain copy of invoice from repairman.

6. To drive safely at all times and to obey literally all regulations and ordinances of states and cities through which he passes.

7. To conform to all ICC and ODT regulations.

8. To hand in a complete report at end of trip.

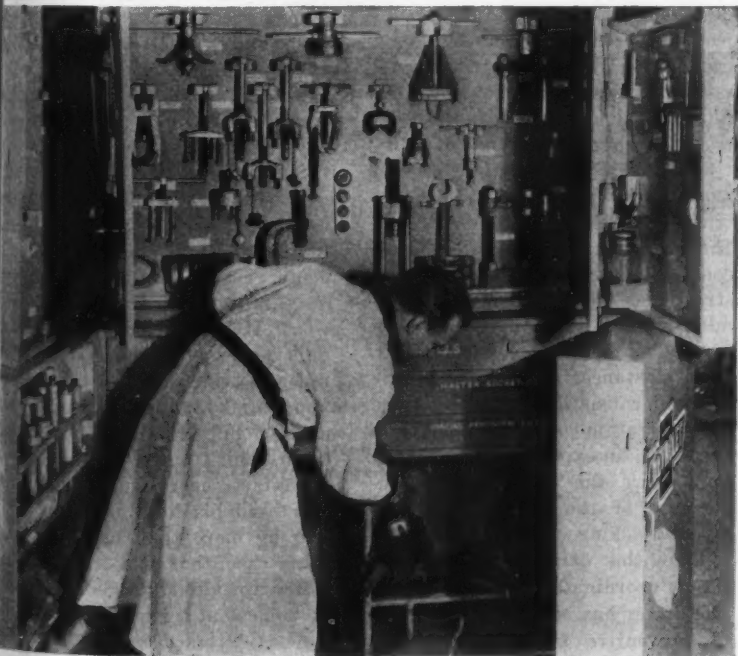
The driver is further admonished to: refrain from spurt driving; adjust brakes properly; distribute loads evenly, never overloading or underloading; change tires with care; rotate tires every 3000 miles; link new tires with new tires and old tires with old tires on dual wheels; have bent or damaged rims, bent or sprung axles, repaired promptly; keep to schedules, but never at expense of proper maintenance.

A recent survey of 10 trucking companies showed that the most important maintenance duties of the driver, were, in the order named, 1. Lubrication, 2. Proper loading, 3. Inspection to detect failure of parts. By faithfully performing these duties, the driver makes it easier to keep to his schedules, maintain his equipment, and keep down truck maintenance costs.

Expenses Rising

With maintenance costs steadily rising, the driver can do much to control such costs by precautions and preventive measures. Out of one large trucking company's revenue dollar, in 1944, 51.56c. were spent for truck operating. If this expense had been cut only 6 percent for the year, the

This service and maintenance shop tool cabinet, developed by General Motors, is attractive, compact, and efficient. Each essential tool is individually placed in a section where it is easily accessible. Specially designed holding fixtures are provided for each tool.



Meet the Peace Jeep



THE POSTWAR JEEP is especially adaptable to the distribution of agricultural products, since it can perform the function of a light truck in hauling crops or livestock to market or railhead. Shown above hauling a load of hay, the new Jeep, recently unveiled to the public by Willys-Overland Motors, can also be used by the farmer in plowing, disking, mowing, raking, threshing, baling, and filling silo.

net income of that company would have been doubled!

While abuse of tires and incomplete and inadequate inspection are the most common factors in maintenance costs, improper and inadequate lubrication is the costliest. Friction is the most destructive enemy of machines and motors. Lubrication, which removes this cause of waste and damage, must be applied with great care. Excessive lubrication collects dirt and dust, and, if allowed to gather on leather belting, may prove dangerous. A lubrication survey, including inspection, for most tractor units is necessary every two years. Reproduced herewith is a Lubrication Work Sheet, Fig. III to show how vital one large trucking company considers this part of preventive maintenance.

Driver Training

Some companies give each driver special training in maintenance duties, which begins when he becomes an employee. The purpose is to provide him with a complete view of the way and the how of maintenance. The course emphasizes the destruction effects of vibration and wear; the need of keeping wear under control; the

damage heat does to a tractor-unit ("fries" insulation, melts metal, blows up tires); and how to keep heat down. The driver is taught the necessity of being constantly alert to symptoms of wear and tear—to see them, to hear them, and to feel them.

Such training courses also are frequently used to screen out undesirable applicants. Among subjects covered are: analysis and explanation of equipment; discussion of duties and responsibilities; interpretation of state and federal truck and highway regulations, including ICC and other federal agency laws; demonstrations of truck operations; individual tests for strength, vision, steadiness, control, perception and health; street and highway tests to determine typical reactions under both normal and difficult conditions. In some instances a less elaborate program consisting only of a simple demonstration of truck performance with an experienced mechanic, may serve the purpose. But regardless of the type of training given, trucking officials are coming to know that drivers must be more closely coordinated with their jobs. The driver has been called the "key of preventive maintenance." Yet

no driver can be regarded in the light unless management gives him:

1. A clear and comprehensive set of instructions or actual training for the job he has to do.
2. A performance standard so low which is just and clear, and which takes into account "absenteeism" (that which cannot be bought or used).

Mileage Inspection

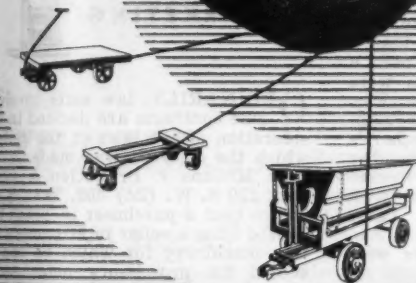
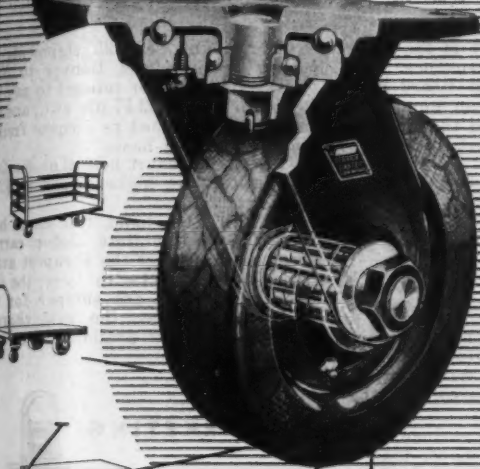
Perfecting the driver's performance alone is not sufficient, but must be implemented with frequent and accurate mileage records, and regular inspections. The ODT and Society of Automotive Engineers stress the "stitch in time" theory and the need for engine inspection or overhauling at specific intervals based on carefully registered mileage records. Since the entire maintenance system depends on mileage run, it is necessary to record actual mileages regularly.

The most satisfactory method is by regular speedometer readings. Where a trucking company finds it too expensive to equip its trucks with speedometers and keep them in repair, it frequently resorts to a simpler though far less accurate plan. For example, to find the mileage of a certain route, a truck normally assigned to that route is clocked by another truck that trails it and whose speedometer has been tested and found in good condition. The mileage record is the normal mileage set for that route. If the truck makes this trip every day at stated intervals, the total mileage is found by multiplying the normal mileage by the number of days traveled.

Such methods give fallacious and unsatisfactory records. Often the regularly assigned truck is diverted to another route because of accidents, repairs or other emergencies. True mileage then becomes guesswork. It is reported that one retail milk dealer who kept no daily truck mileage, tried this plan for a month and found that more than 55 percent of his drivers were straying from their routes to go home for breakfast every morning. The increased his total computed mileage by more than one-third. Another case, that of a tractor-trailer driver for a food products company, is somewhat typical. He was

(Continued on page 103)

new life



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tomers do not have to be turned away or told that their household equipment cannot be repaired for weeks. It brings the spare parts stocks of the nation within but a few hours of retail stores. Very often, Air Express means next day delivery.

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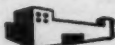
Getting Down to Cases In Distribution

FINANCE & INSURANCE • HANDLING & TRANSPORTATION
PACKING & PACKAGING • WAREHOUSING & MARKETING



By LEO T. PARKER
Legal Consultant

WAREHOUSING



IT is well established law that any contract exempting a person, as a landlord, from liability for consequences of his negligence, is void, because it is against public policy.

In *Nassau Gunned & Coated Paper Co. v. Noyes Buick Co.*, 41 Atl. (2d) 920, N. H., reported June, 1945, testimony showed that a paper company leased a warehouse building under a lease contract which contained a clause that the paper company would pay all charges for electric current used in the warehouse and "render the lessor (landlord) harmless from any claims for loss or damage from fire, theft, or leakage, to merchandise, equipment, fixtures, machinery, or property of the lessee during the entire period of occupancy by the lessee."

The landlord made a contract with a contractor to perform repairs on the warehouse building. This contractor, while using an acetylene torch, permitted sparks to drop on combustible materials, starting a fire which destroyed the warehouse and the contents comprising wax, glue, tapioca flour, chromic acid, and paper, having a total value of \$75,000.

The question presented the court was whether the above clause in the lease contract relieved the landlord from \$75,000 liability. In holding in the negative, the higher court said:

"The ordinary contract exempting a person from liability for the consequences of his negligence is held to be void, as against public policy."

Insurance

Considerable discussion has arisen from time to time over the legal question: When a warehouse corporation acts as a subsidiary to a common carrier, are the former's employees "legal" employees of the carrier?

In *Railroad Retirement Board v. Duquesne Warehouse Co.*, 149 Fed. (2d) 507, it was shown that a subsidiary of the Pennsylvania Railroad Co. operates two warehouses equipped with platform sidings and other facilities for the receipt, delivery, and handling of inbound and outbound freight transported by the Pennsylvania Railroad Co.

The question presented the court was whether employees of this subsidiary are employers within the

meaning of Section 1 (a) of the Railroad Unemployment Insurance Act. The Railroad Retirement Board held that the subsidiary is an employer. The lower court reversed the Board's decision. The higher court upheld the Board's decision, saying:

"We cannot believe that operations habitually carried on by railroads in connection with their transportation service and intimately connected with that service are not part of the business of railroading which the Act is intended to cover."

Intrastate Business

According to a new higher court decision, once merchandise is deposited in a warehouse and mingled with other goods in such warehouse, the interstate journey ends.

In *Domen v. Pan American*, 147 Fed. (2d) 994, it was shown that a New York company maintained a branch in Puerto Rico. Goods were sold to consumers in Puerto Rico through salesmen. The branch manager sent orders to the company's main office in New York. Merchandise shipped from New York to the branch office was stored and mingled with other goods in the warehouse. Later this merchandise was delivered to customers who had placed orders with the branch office salesmen.

The higher court held that the salesmen and branch office were not transacting interstate business. In other words, this court held that the terminal point of the interstate journey of the goods was the warehouse in Puerto Rico. All further sales, storage, and shipments in Puerto Rico were strictly intrastate transactions.

TRANSPORTATION



ACCORDING to a decision rendered by a late higher court the "legal" freight rate is the highest through rate, although a lower local rate is available.

In *T. & M. Transportation Co. v. S. W. Shattuck Chemical Co.*, 148 Fed. (2d) 777, testimony proved that the established freight rate is 85c. per cwt. from Denver to Chicago, and 99c. per cwt. from Chicago to New York.

The established through rate for the route over which the merchandise actually moved, was \$2.17 per cwt.

A company sent 35 shipments of motor carrier from Denver to New York. The shipper refused to pay a through rate of \$2.17 per cwt., and the motor carrier sued to recover freight charges on this basis.

The higher court held that the full rate is the highest rate of freight per cwt.

On the other hand, this court held that if an interstate motor carrier promised to select the cheapest available rate and failed to do so, the carrier is liable to the shipper for the difference between the rate charged and the cheapest available rate.

MARKETING



ORDINARILY, law suits involving sale contracts are decided in consideration of the laws of the state in which the contract was made.

In *McCans v. Brandtjen & Klum Inc.*, 179 S. W. (2d) 352, Tex., it was shown that a purchaser in Texas purchased from a seller in Minnesota certain machinery for which he had executed his promissory notes and chattel mortgage. Subsequently, the legal rate of interest charged the purchaser was based upon \$2,620.80.

The purchaser sued to recover from the seller penalties for collecting usurious interest in Texas which, however, is legal in Minnesota.

The higher court refused to hold the seller liable, saying:

"We hold that the contract shows on its face that it is one made in Minnesota and is performable in said state."

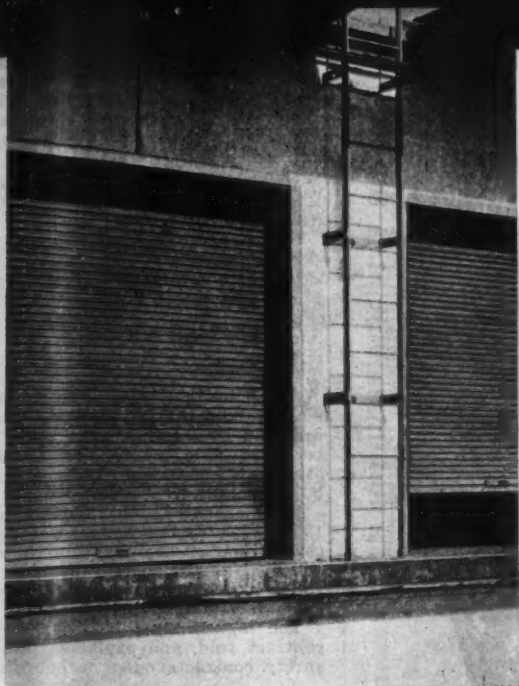
Contract Void

Modern higher courts consistently hold that in all contracts, the buyer must agree to sell and the purchaser must agree to purchase the specified merchandise, otherwise the contract is void.

In *Exchange, Inc. v. Coco*, 29 La. (2d) 762, La., it was shown that buyer and seller signed a contract which contained a clause, as follows: "The Party of the Second Part (seller) hereby agrees to sell to the Party of the First Part 12,000 lb. of Shallots Seed to be delivered by June 1, 1943 at the price of 3c. per pound."

The contract contained all other details pertaining to price, quantity, quality, date for delivery, etc.

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THE WEATHER

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City Edition

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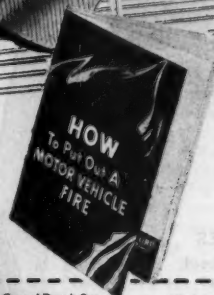
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SEND FOR THIS FREE BOOK

As part of a campaign to help stamp out the danger and waste of motor vehicle fire, General Detroit has just published a new booklet for motor car, bus, and truck operators. It tells in clear, concise language exactly what to do when fire breaks out, and what steps to take to prevent fire in your car or truck. The book is pocket-size, lavishly illustrated, full of vital, useful information. A very limited printing has been made, but you may have one copy without charge. Just fill out the coupon at right and put it in the mail today.

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It is your assurance of dependable fire extinguisher service. Have your motor vehicle fire extinguisher inspected as often as you get a grease job. Watch these points:

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- * Check extinguisher handle—it should turn easily.
- * Check extinguisher fluid—make sure it is full and free from foreign matter.
- * Check pumping action—pump should work smoothly and not stick.

If in doubt replace with a genuine **S-O-S Fire Guard** with panic proof safety lock and patented Safety Phlare for your positive protection.

When the time for delivery of the seed arrived the seller refused to make the delivery, and the purchaser filed suit to recover \$1,440 damages. The seller contended that the contract was not valid and enforceable, because it imposed no obligation on the purchaser to buy, although it did impose an obligation on the seller to sell.

Although the purchaser proved that he had advanced the seller \$75 when the contract was signed, the higher court held the contract not valid, and therefore held the seller not liable in damages. The court said:

"Such a contract is not enforceable and is a nullity if either party thereto desires to declare it, as the defendant (seller) has in this case."

FINANCE and INSURANCE

MODERN higher courts consistently hold that all verbal contracts are void by which anyone agrees to be responsible for the debts of another. Such surety contracts must be in writing.

In *Chickasaw Lumber Co. v. Blanks*, 185 S. W. (2d) 140, Tex., it was shown that a lumber company entered into a verbal agreement by the terms of which it agreed to be liable on surety debts incurred by a contractor.

The higher court held this verbal contract void, and explained that all surety contracts must be in writing.

Driver Liable

Recently, a higher court held that anyone who physically effects an injury may be liable in damages.

In *Reliable Transfer Co. v. May*, 29 S. E. (2d) 187, Ga., it was shown that a man named May sued a transfer company, its truck driver, and Liberty Mutual Insurance Co. for injuries received while he was riding as a patient in an ambulance which collided with a truck of Rhems Co. at a street intersection. One of the causes of the collision was alleged to be the negligence of the transfer company's driver, who parked his truck at the intersection in such a way as to obscure the view of the drivers of both of the colliding vehicles. This court held:

"The defendants should have anticipated or foreseen that some such injury might occur as a result of their own negligence in illegally parking the truck."

Insurance Policy

Many warehousemen, and others, have for many years paid premiums on insurance policies, when in fact no policy is needed for certain kinds of protection.

In *Stedem v. Memorial*, 187 S. W. (2d) 469, Mo., it was shown that a corporation held an insurance policy under which the insurance company agreed "to pay all loss by reason of the liability imposed by law or contract upon the insured."

The legal question presented the court was whether an injured child could recover insurance for the same

injury for which it could not sue and recover damages from the insured. The higher court refused to hold the insurance company liable.

PACKING and PACKAGING



If a new trade mark exactly the same as an old trade mark can be used without infringement, if used on goods in different classifications.

In *Goldsmith Bros. v. Atlas Supply Co.*, 148 Fed. (2d) 1016, it was shown that a manufacturer registered a trade mark "Goldex" for use on a rubbing product comprising pure glycerin and rubbing alcohol. This product is sold in drug stores.

Another manufacturer, who sold an anti-freeze solution for automobile radiators applied for registration of the same trade mark, "Goldex." This anti-freeze solution also consists of a mixture of alcohol and glycerin, but it is sold through automobile dealers, supply stores, etc.

The higher court allowed registration of the new mark for use on the anti-freeze solution, and explained that this new use of the mark would not confuse the public, because it would be used on products in different classifications.

LEGAL

Question Box

Warehousing

Question: A few years ago, we stored one of our customer's automobiles in a garage. We definitely advised her at that time that the car would be stored in a public garage, as we had no facilities for storing cars.

The car was damaged because it was not pushed all the way back against the wall. The garage attendant advises that he called us several times to push the car back against the wall, but we have no record of any calls, and therefore we did not change the position of the car.

Can we hold the garage liable for fender and top damages? Edison Warehouse Co.

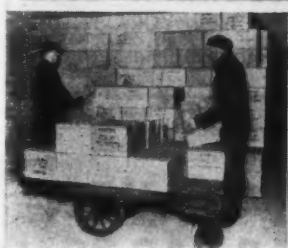
Answer: The extent of your liability depends upon whether you or the garage issued the receipt for the automobile, and also to whom the owner paid storage charges.

If you acted as agent for the owner, and she paid the garage charges to you, to be transmitted to the garage owner, you are liable only if the testimony proves that the damage resulted from your negligence. If you instructed the garage attendants not to move the car, or if you retained keys to the car, or if you placed the car in its exposed position without notice to the garage owner, you may be legally negligent and, therefore, liable.

On the other hand, if you placed the car in care of the garage attendants, who drove it to its exposed position,

HANDLING+Processing+HANDLING+Assembling+HANDLING
+Packing+HANDLING+Storage+HANDLING

HANDLING—the Common Denominator of PRODUCTION



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Cubic transportation—Lifting and placing as well as carrying—is essential to efficient handling. Where a product is handled is just as important as how it is handled.

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it is my opinion that the garage owner was negligent, and is responsible for the damage.

Question: It is possible that we may desire soon to remove goods stored in temporary warehouses to permanent quarters. Can you advise us of the procedure necessary to safeguard our corporation? Harper Warehouse Corp.

Answer: Your corporation should obtain a written consent from the owner of the stored goods to remove them to a different warehouse. This consent document should give the location of the warehouse in which the goods are stored at present including the floor or compartment, and also the location of the warehouse to which the goods will be transferred. Failure to obtain consent from the owner to remove his goods varies your legal status, and you may be held liable for loss or damage to the goods in the new location, although such loss or damage did not result from negligence of your employees.

Transportation

Question: Recently we made a mistake and transported a shipment for \$265. Later we found that the tariff is \$365. The shipper refused to pay the difference. Can we compel him to pay us the difference? Dusty Transportation Co.

Answer: Yes, the court will render a verdict in your favor. The shipper must pay "legal" rates.

The courts have gone so far as to hold written contracts void by which a carrier agrees to haul freight or merchandise for less than legal rates. In other words, the carrier may sue and recover from the shipper the difference between the legal rates and the illegal contract price.

Packaging

Question: Can a consumer sue and recover damages for injuries caused by exploding bottles? Peenes Bottler.

Answer: A leading higher court decision is Butler, 180 S. W. (2d) 994, reported Aug., 1944. In this case it was shown that a consumer purchased six bottles of beer. When he was in the act of lifting the cap from one of the bottles, an explosion occurred, and he suffered personal injuries. He sued the brewery company for damages.

The lower court held the consumer entitled to heavy damages. However, the higher court reversed the verdict of the lower court, and held the brewery company not liable. This court stated important law, as follows:

"The container is not intended to be taken internally by the consumer. The food is the article that is to be consumed by human beings."

On the other hand, there are records of higher court decisions holding bottling companies liable for injuries caused by exploding bottles, if the testimony proves that the bottler failed to use reasonable precaution to test bottles for weakness.

Therefore, if you use "ordinary" care in filling and testing your bottles, it is very improbable that you can be held responsible for injuries resulting from explosion.

Better Packing

(Continued from page 47)

The purpose of this and several succeeding articles is to give back to commerce and industry the benefit of those improvements in the field of packing and crating growing out of war experiences which they as well as all the rest of us who will ultimately foot the costs of the war have purchased. These improvements were purchased through stock piles of non-salvageable materiel; through creation of vast repacking facilities, and through the employment of thousands of men in maintenance work abroad reconditioning new items damaged or corroded en route. Inestimable, also, is the cost of supplies, equipment and materials of war which may have moved up "too little or too late" as a result of poor packing.

We plan to cover in this series of articles the trends, develop-

ments and changes in packing which may afford industry a practical basis for incorporating into its packing and shipping practices some of the knowledge acquired from global warfare.

Packing Laboratory

In the repacking of air corps freight, which failed after only the domestic portion of its journey, we had an excellent laboratory for packing research. There were daily problems, requiring "container diagnosis" and all sorts of experimentation into new methods to find lasting cures for weak points.

For nearly two years the amount of work seemed to grow with our mounting problems of supply. Because of the exigencies of war, time did not permit rejection of shipments. Regardless of the additional cost to the taxpayer, cor-

rective packing and packaging had to be attempted in the port area. In an effort to direct attention to the situation and make corrections at the source, unsatisfactory reports, letters, telephone calls, and photographs were sent to shippers. Still the situation continued serious. Freight rejected by the cargo inspectors at port terminals was rushed into packing warehouses where day and night shifts were on hand to do whatever was necessary.

Bear in mind, as most manufacturers with war contracts will confirm, there has been nothing tricky or complex in our packing specifications to suppliers. There was only one ultimate goal for cased materiel: that the contents should reach our fighting men in maximum serviceable condition. In fact, at shipside the details of the packing

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Under license of Salsbury Corp. Nutting also makes a complete line of Floor Trucks, Wheels, Casters.



FLOOR TRUCK LEADERSHIP SINCE 1891

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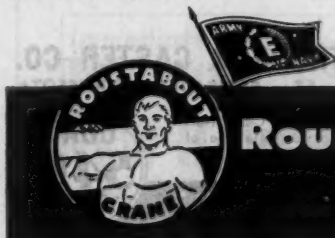
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that hustles stuff up to 10
tons all around your plant**

YOU have no load-handling emergencies when you have a Roustabout — whether it's a special car or truck loading job, a heavy machine to be moved, any usual or unusual handling situation, Roustabout is where you want it when you want it, quick, powerful, low cost — saving time and manpower. Easily, smoothly, it lifts 2 tons at 27½ ft. radius, 10 tons at 9½ ft. Boom turntable and all gears run in oil; built for years of overwork. Hundreds of industries regard their Roustabouts as indispensable. Write today for full story of these money-saving wheel or crawler cranes.

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and money on these and
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- Moving large machines and parts
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- Moving big castings, motors, railroad and marine gear
- Loading air transport planes
- Handling tanks, pipe, structural steel, rails, timber
- Installing heavy valves and fittings



THE HUGHES-KEENAN COMPANY
611 Newman Street, Mansfield, Ohio

Roustabout Cranes

By Hughes-Keenan

and crating specification in a manufacturer's contract were not a part of the inspector's concern. He merely looked to see whether basic, commonsense standards of good packing had been met and whether the container jeopardized the safety of its contents.

If anyone has the impression that because I am an air force officer, concerned with repacking air supplies, that the serious lack in packaging know-how applied only to aircraft spare parts, let us assure you that the situation was similar everywhere.

To supply an air force is the equivalent of supplying many small cities with all of the necessities of life. It requires all the materials, conveniences and services needed in any civilized community, in addition to the specialized tools for conducting its own main business which is that of maintaining, servicing and flying airplanes in combat or in the line of supply.

There was absolutely no uniformity in the nature of the freight which would be rejected for better packing, one day compared with the next. Every class and type of cargo imaginable (with the exception of perishables) poured into the packing rooms to do again, adequately, the job that should have been done by the original shipper. Tools, vehicles, clothing, paint, film, pipe, gasoline, oil, furniture, laboratory equipment, heavy machinery, watches and delicate instruments, raw materials, office supplies, replacement parts (the list is endless) were held up, delayed or damaged, all because of unsatisfactory packing and crating at source.

No Uniformity

Just as there was no uniformity in the type and class of materials received, there was no uniformity in corrective measures which might be required. It might be a single case in need of minor reinforcing. It might be a quantity of cases adequate in all respects except that the outside side walls were so light they would crush should the case rest on an uneven surface. This problem was solved by building a strong overpack. It might be a lot of several thousand containers, which, while strong enough outwardly, had shown internal break-

age for want of proper cushioning or bracing inside, which meant opening and devising a new, adequate packing job. Or it might be that strapping was too light and had broken, or that stencilling was not waterproofed and was running off. Or it might have been a perfect pack, spoiled by poor car blocking and bracing.

Our packing and crating establishment was busy night and day. It was an organization which never would have existed, had American industry known how to package properly.

(Next month, Maj. Saperstein will trace the development of the packaging control technician as a necessary specialist in today's distribution.)

Two-Way Radio

(Continued from page 68)

all brought out to a control panel located in the cab of the truck, and hung directly to the right of the driver under the dash stringer. The controls consist of a squelch level control and a volume control. The former is used to raise or lower the level at which the signal will turn on the loudspeaker in the cab. With the squelch system, the loudspeaker is turned off until a signal is received. The volume control is the same as that on any home radio set, and controls the volume of the received signal as heard from the loudspeaker located on the roof of the cab.

Shipping Perishables

(Continued from page 49)

minimal, warehouse and market facilities should be built as one unit, starting with a long, wide concrete deck, about three to four feet above the ground. The air terminal portion should face the field. The warehouse section would be in the center of the long building, with a runway for light warehouse trucks and tractors circling the entire section. The market section should be built in stalls, facing the parking lot and highways. This building plan would facilitate the movement of produce into the terminal from transport planes. Then it would be loaded onto trucks or trailers and deposited in the cool warehouse section, or delivered to the market.



FREIGHT ON BOARD

It's easy with the new CARGOVEYOR

This new development in the Rapid-Power Booster Line . . . the CARGOVEYOR . . . was designed expressly for air cargo loading and unloading for the Pennsylvania Central Airlines and is doing a fine job for them. Performance shows that with the CARGOVEYOR two girls can do in LESS time the job which before required FOUR husky men to handle by the strong back method.

Freight and baggage move efficiently into or out of the plane in a minimum of ground time.

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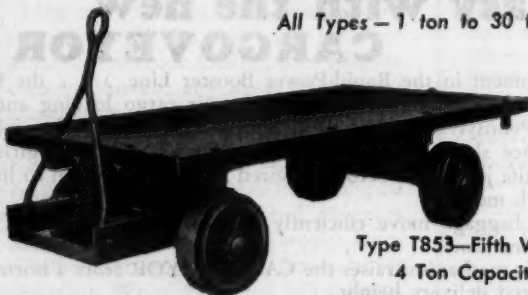
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Insurance

(Continued from page 48)

by insurance. The additional cost over Forms A and B is slight. It is well at this point to remember that insurance protects only that property which is at risk or exposed or damaged by a peril assumed by the company in the policy.

Packing Affects Rates

This policy, therefore, covers all risks and all perils to which property may be exposed in transit, except those risks or perils which the company does not or should not assume; and which, if they were assumed, would call for a premium cost that would be excessive. An insurance policy and the wording of the form, particularly the "all risks" form, is not as complicated or hard to understand as might be imagined.

The shipper should read it through carefully, check doubtful points with his agent and broker, and ask confirmation in writing of verbal explanations. He should post employees, charged with the responsibility for handling property, on his insurance program. This is particularly necessary in shipper's interest insurance, since the rate and premium will be seriously affected by the manner of packaging and labeling, and by the method of transportation selected. The exclusions of the "all risks" form should be studied, and if coverage on what is excluded (such as damage from strikes and riots) is desired, the form can be altered to include the hazard at a nominal additional cost.

World Motaircargo

(Continued from page 56)

clearly defined manner of cooperation between the Dutch airlines and motor carriers. Having proved successful then, it is considered likely that the practices will be reintroduced with return of normal conditions.

Contracts were entered into between KLM and major trucking companies for pick-up and delivery services. In several important cen-

ters, KLM maintained its own fleet of delivery trucks. This was true in London, where the company used eight delivery trucks. A similar arrangement was provided at the central point in the Dutch East Indies. Publishers of newspapers and flower concerns had their own motor vehicles and assumed all of the functions incidental to land transport of their products.

Free delivery was afforded by the airline but only within a small area of the airport in the major centers. There was no direct charge by the airline for delivery of air-borne goods by motor vehicle within a radius of two miles of the airport. Whenever the distance amounted to three miles a charge was incurred of about 2½c. per lb. in American equivalents. On distances over three miles, the charge was a matter of special agreement.

This system of handling motor trucking services with airborne goods was developed gradually and put to excellent use during a period of 10 to 12 years before the war.

Motairhandling

(Continued from page 39)

have done little towards the reduction of ground handling costs, plane loading costs, etc.

We will also find that because the larger airports require so much space, they must necessarily be placed outside of metropolitan areas. This will necessitate more travel time for passengers and air cargo from the point of pick-up to the point of delivery. This will offset the speed gained in air travel, unless a coordinated system of handling can be put into operation which will permit passengers and cargo to be transported quickly to and from the airport.

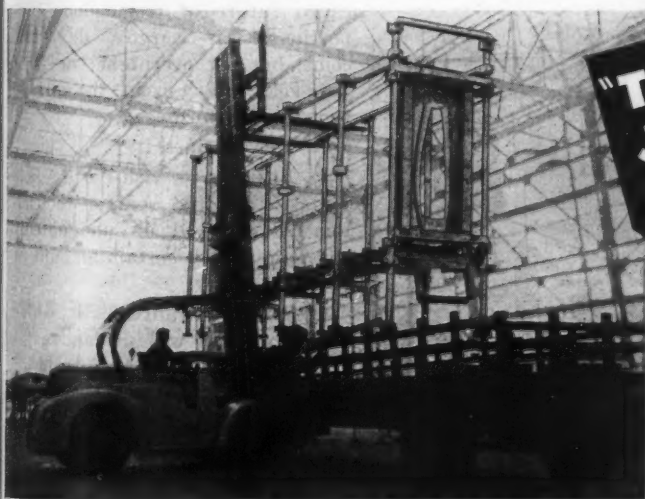
Passengers possibly can be transported from the main airport into the center of metropolitan areas by helicopters or to adjacent airfields by small planes. However, air cargo will be in such bulk that it will be necessary to unload it quickly from the plane and place it on motor trucks with the mini-

mum amount of handling for quick transportation to the point of use.

Possibly some of these radical designs are already on drawing boards in engineering departments, and no doubt the operations departments of the airlines are also thinking along similar lines.

The developments that have been made during the past year have shown that these difficulties can be overcome if the necessity arises. We can look forward to the coming year to uncover and put into actual operation many ideas in air cargo handling and airplane design, which only a few years ago would have been considered impossible.

This magazine is well aware that air cargo is required in the overall distribution picture, just as it is we know that materials handling equipment can reduce overall distribution costs on any transportation or production operation.



HYSTER COMPANY

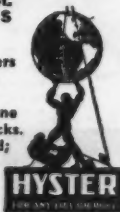
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Fork Lift Trucks, Crane
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All gasoline powered;
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"The Jig's Up!" That's the way Consolidated Vultee Aircraft Corporation captioned this picture as run in their publication, *The Consolidated News*. It shows a Hyster 150 Fork Lift Truck raising a gigantic Liberator jig, to lower it gently onto a waiting truck. They say, in part, "Lifting the many-tonned jigs of iron and steel is mere child's play to the mighty Hyster Lift Truck which raises mammoth loads with the greatest of ease."

Literally and figuratively, the "jig's up" for bottlenecks of production, too, when Hysters appear on the job. Movement of vitally needed parts and materials is speeded up; schedules are maintained and improved. Handling costs are lowered.

A Hyster Fork Lift Truck steers as easily as the finest automobile. Lightly or heavily loaded, it responds to fingertip pressure. This means quicker maneuverability, time saved, more work done. From the Hyster 20 (2000 lbs. capacity) to the Hyster 150 (15,000 lbs. capacity) there is a model suited to your needs. Write for literature.

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Everywhere—under exacting conditions—ACLC Hoist Hooks are doing the big, important jobs... faster and better... with greater safety to life, limb and load.

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WEST BEND EQUIPMENT CORP.

231 Water Street

West Bend, Wisconsin

Materials Handling Engineers

ATA...

(Continued from page 40)

that carriage by air will result in a major change in shippers' habits; they have merely confirmed what other forms of transportation have learned with reference to l.c.l. and l.t.l. traffic. But, they have established a common purpose with the motor truck industry. This purpose is to furnish the users of transportation with that which they need and want, a complete and coordinated service involving both motor and air! Why must such coordination be between motor and air carriers? Basically speaking, those who are going to patronize air cargo in the future will be seeking speed in transport and in handling of their goods. Who will challenge the speed of air carriers over maximum distances, or that of the motor carrier for minimum hauls?

How does this common purpose affect both groups?

Many members of the trucking industry have been' oversold on an immediate, bright, glittering air cargo future of tremendous proportions. Air cargo's day will come, but not overnight; or is it here yet. In any event, the cartage people today foresee:

A. New business.

B. Business which will help round out their service to customers, and which undoubtedly will gain them a certain amount of prestige.

C. Service requirements which in many cases will demand expedited handling over other traffic.

D. The problem of arriving at a compensatory rate on the basis of unknown volume.

Air carriers see the problem of:

A. Making the best possible choice of and arrangements with individual cartage operators.

B. Developing sufficient business so that such services may be self-supporting.

C. The ramifications incidental to any establishment of joint rates.

* By regulation, air carriers report operating statistics in terms of pound-miles. This practice often proves misleading to other industries accustomed to dealing and thinking in terms of ton-miles, and has been responsible for not a few erroneous conceptions re air cargo.

Coordination...

(Continued from page 41)

Air Transport Command, no doubt, will be of great value to the airlines in the handling of air cargo in the future.

The tariffs of the two lines now actively in the air cargo field are far higher than corresponding rates published by surface carriers. Too often people are misled by various estimates given as to cost of transportation by different types of airplanes. These costs are generally flying costs and a considerable amount must be added before a good idea of the rate that could be charged can be gained.

To these costs must be added other costs, including indirect flying costs, traffic expenses, terminal handling, pick-up and delivery, overhead and other items. John W. Moore, transport contract department, Curtiss Wright Corp., some time ago estimated that for air cargo indirect line transportation costs would amount to approximately 60 per cent of the direct flying costs and on top of this there would have to be added the cost of terminal handling and pick-up and delivery.

In the case of pick-up and delivery cost or the cost of gathering and distributing cargo from points from 50 miles to 200 miles distant from the air terminal, the biggest single factor influencing the total costs of the shipment is the necessity for the truck operator to assess a minimum charge. It is then that the use of human hands and paper work comes into the picture and the minimum charge may be the same whether the shipment weighs 20 lb. or 120 lb. As the planes are improved, however, and the line-haul costs reduce, the average size of air cargo shipments can be expected to decrease and these minimum charges will be applied to these larger shipments at a lesser amount per pound. The per pound rate on air cargo shipments can, therefore, be expected to decline much more rapidly than the reduction in cost of line-haul by air.

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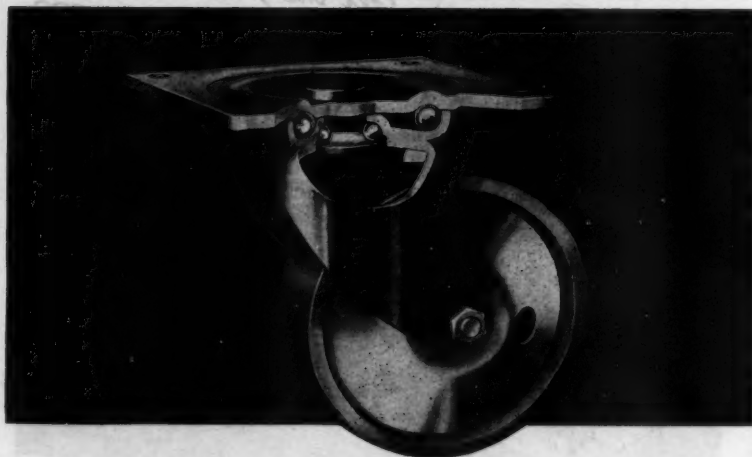
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The Bassick Co., Bridgeport 2, Conn.

Bassick

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... MAKING CASTERS DO MORE

Costing Handling

(Continued from page 66)

paint will differ from the cost of handling fibre cartons containing 24 pt. If the 20,000 units were split up into 5,000 drums and 15,000 containers, instead of 20,000 of the same units, to determine how much to charge for handling the drums and how much for the containers would require an additional computation because you could not use the average figure of .3375c. per unit unless your system was such that drums cost no more to handle than fibre containers. In order to find this out, you would have to cost different units separately.

Once assured of this fact, however, you could combine the units for costing purposes and use the average figure. To segregate costs, a record must be kept of the number of drums handled during the period and the number of fibre containers, the pro-rating or cost assessment to each type unit could be made on a tonnage basis or whatever method might be considered most suitable by the cost accountant.

Pro-rating, even on production, involves an estimate and the same is true with distribution costs. It depends upon the handling set-up and there are so many different routines and so many different units handled in some plants in varying proportions, that no fixed system of cost recording can apply. However, the general formula given herein may be used in all plants with the necessary variations in keeping with plant routine.

Cost Factors In Distribution

(Continued from page 76)

tribution will automatically be lowered.

There are numerous avenues of approach by which any manufacturing concern can bring about reduction in its total cost of transportation. But, each step requires careful study and searching analysis. In this article we briefly consider only one; that pertaining to the cost of storing, or warehousing. First, let us refer to the in-

bound cost of transporting raw material.

Possibly because of limited storage space at the point of manufacturing, or because of the need for maintaining abnormally high inventories of raw materials, a manufacturer finds it necessary to purchase such materials and ship them from source of supply to a point intermediate to his plant where, he places them in storage at a public warehouse. As use for the materials arises, the manufacturer ships from the public warehouse to his place of production.

Of course, cost accrues because of storage charges. There will be two separate movements from the point of origin to the mill or factory, instead of only one, as would be the case if the shipments moved directly to the manufacturers place of business. Although storage of the raw material in a public warehouse creates cost, there is the possibility that total cost may be less than if outlay for additional space and maintenance at the point of production were made.

It is likewise true that in storing raw material in a public warehouse prior to final delivery at the mill or factory, a manufacturer may face the necessity of paying two freight charges which combined would be much higher than the single transportation charge for movement from source of sup-

ply to point of production. Yet, with the practice of railroads in providing storing-in-transit privileges, it is probable that a manufacturer could use the facilities of a public warehouse without appreciably increasing the transportation cost of raw materials thus shipped.

Class Rate Decision

(Continued from page 64)

traffic be in the interest of the south with its relatively low rates on raw materials, or of the west with its relatively low rates on products of agriculture, including Idaho potatoes? I fear not. But on the theory of this report, and whether we like it or not, that is the direction in which we are now drifting."

This decision, indeed, marks a departure from traditional paths. We would say from a "drift" or gradual progression to a directed movement, motivated by the Commission's apparent declaration of

policy of requiring greater uniformity. Of course, this decision covers a very limited field of rates. The class rates themselves, as we have pointed out, are not generally observed and move only a small amount of tonnage in official, and very much less in all the other territories. But what the Commission says in its decision seems to disclose an intention to make uniformity a standard of adherence to be expected of all rates, unless good reasons for non-adherence can be shown. Heretofore, uniformity has been a consideration, but it has



Handling

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Whether you move loads of 250 pounds or 15 tons—you can make it a one-man job with a P&H Electric Hoist. There are sizes and types for all requirements up to 15 tons—for all types of monorail systems.

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been subordinated to what may be termed more practical considerations. Now it is advanced in rank to primary importance.

While class rates only were before it, by requiring a uniform classification and scale, it adopted a pattern in which, it suggests, all rates may be fitted, and of equal, if not of greater importance, in reaching its conclusions, it applied a method (use of comparative costs) which may be readily used in the accomplishment of uniformity of other rates.

Immediately the effect of this decision will be adverse to shippers of eastern territory, who will be required to pay increases to the railroads, which they did not request. The southern and western railroads will suffer losses because of the reductions in their territories. Ultimately, there may come to test the question whether rates on a mile-for-mile basis can withstand the erosion of competition. They have not been very successful in the past.

Now that the war is over, the railroads will have more severe competition from highway and water carriers. Within limits each carrier can perform service at lower rates. Is the public to be accorded the benefit of cheaper service by other carriers? Will the railroads lose tonnage to them by an enforced adherence to mileage rates, or will rail rates be made the floor for rates of the competitive carriers in order that rail-rate uniformity may be maintained?

Decentralization of industry will be accelerated by required adherence to rate-equality. Even though this decision directly affects class rates only and will affect only a small tonnage relatively, the newspapers report that the Southern Governors said it would result in a greater decentralization of big industry and stimulate development of small, locally financed industrial plants in the south and west. Governor Sparks of Alabama said that "decentralization of industry is the next step in our national economy. It will largely take the place of mass and assembly line production. The south can not be helpful in this transition unless trade barriers and rate handicaps are removed. The order of the ICC

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speaks the early arrival of that day."

There is no unemployment apparently among the planners. Some plans conflict with others; all of them cannot work. The experiments may be costly. Some decentralization may be desirable and needed, but it may be successful only where economic conditions are favorable, and freight rates are probably not the only answer. Industry should not be scattered by force. The decision of the Commission in this proceeding obviously will not have the broad effect that the Southern Governors anticipate. It was too short a step and embraces too few commodities. But as a portent of the future, the decision is of great importance.

Continued steps toward progress may take freight rates into politics where they should not be. Sound and workable rate patterns require the study and administration of unbiased and trained men, it is not the work of politicians.

Surplus Equipment

(Continued from page 57)

They appear to be the equivalent, in a general sense, of the medium and light trucks, in certain businesses. Veterans want them so much that SPB has arranged to provide these craft on credit, with the right to buy by paying in instalments; or, if they wish, they may lease them, the lease invariably running five years.

Lease Procurement

The lease is the favorite form of procurement by which the airlines acquire the use of transport planes. They lease the aircraft for five years. The lease, usually, may be cancelled at the end of a year. A lease is obviously preferable to outright purchase, in most cases, because, to quote the Surplus Property Board, "at present surplus transport planes have great economic value. This condition, however, may not be expected to con-

tinue long after civilian production commences."

Civilian production has commenced. It is very clear that almost every six months will evolve some new improvement that will be important to the airlines. The airline operators foresee a tremendous pressure for more air transportation, from all types of people and from people in all income grades. Lt.-Gen. Harold L. George, Chief of the U. S. Air Transport Command, recently told the country that it was necessary to develop not less than 5,000 transport aircraft, of which the civilian lines would be compelled to use 4,500. He feels the rest, 500, are necessary for use by the military in serving distant establishments. There is sound reason to feel that the military will bend every energy to promote a great fleet of civilian air transports in this country.

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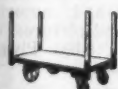


Fig. 753
4-Wooden Stakes



Fig. 772
1 Rack



Fig. 751
4 Pipe Stakes



Fig. 760
1-Bar Handle



Fig. 769
Pat. App. for

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Traffic Management

(Continued from page 70)

subject. His plan has weathered the storm of critical discussion and might well be the plan adopted by the transportation industry as the method of forming a national organization of traffic management.

Uniform Standards

All of the numerous reasons which have influenced any group to organize for professional, promotional and educational work are present in the traffic field. Accountants, engineers, bankers, insurance men and others have found it to advantage to organize and develop the best interests of themselves and their calling.

However, the basic reason why professionalization is needed in traffic management is that it will establish and tend to maintain essential and uniform standards of practice everywhere in the United States. It will be another important step toward better standards and more efficient and economical distribution. It will tend to make the traffic manager a distribution specialist in every sense of the word.

Professionalization means organization. Organization of the traffic men of the United States in itself will lead to many benefits. A few of these are:

1. Conducting impartial investigations into transportation problems and publishing of findings for the benefit of the transportation industry and the public.

2. Encouragement of young men and women to enter the traffic field because of the high standards of practice developed.

The field of traffic management at this stage of its development is ready for organization. The transportation industry is one of the basic industries of the United States. It has developed a body of technical, economic and legal data which must be understood by those who hope to advance in the work. It is a public service in which the entire public is interested. Other groups are organized to assist be-

ginners along the pathway to greater usefulness and success.

Traffic management has developed a group consciousness which facilitates organization. A number of able men have achieved positions of prominence in the field through their efforts and opportunities and many of these men are willing and eager to assist others for the good of the profession. Substantial progress has been made in developing a literature of transportation and traffic management. Universities, colleges, evening schools, extension schools, correspondence courses, and study groups have assisted in training many for more effective service and advancement. Much has been done, but not enough. The foundations have been laid, now the building must be erected.

Even staunch advocates of the professionalization of traffic management, such as Dr. G. Lloyd Wilson, recognize that there are several dangers which will have to be faced in connection with any national organization as has been proposed:

1. It must not be one of "these self-anointing organizations where a few persons take it upon themselves to conceive that they are experts in the field, and then proceed to anoint others they think qualified for various reasons."

It cannot be a one-man or one-group organization. It must be a movement that comes spontaneously from the field.

2. Sectionalism must be avoided. This does not mean that any state or sectional organization should not function, because there must be some subdivision, but the idea should not be localized to any section of the country any more than it should be localized to any particular individual or group.

3. Protect the organization in such a way that it will not get into the hands of some one, or some

(Continued on page 98)

Books and Catalogs

Supercharging for Greater Power and Improved Performance. Well illustrated 16-p. book containing historical facts on supercharging; the mechanical principles of the Root type, positive displacement supercharger, methods of manufacture and applications. B-W Superchargers, Inc., Milwaukee, Wis.

Directory of Commodities and Services. 5th edition containing about 10,000 major commodities and services now under price control; up-to-date information re OPA. \$1.25 per copy, which includes six monthly supplements to follow. Superintendent of Documents, Government Printing Office, Washington, D. C.

Truck Leasing. 11-p. book prepared "to acquaint business executives with advantages inherent in truck leasing, and with the service offered by National Truck Leasing System and its member companies. National Truck Leasing System, 540 N. Michigan Ave., Chicago 11, Ill.

Liquid Envelope. 12-p. of pictures and text re the "tough, elastic, impervious film for the packaging and protection of materials or equipment in transit or storage. Better Finishes and Coatings, 168 Doremus Ave., Newark 5, N. J.

Veterans Pamphlet. Aid to returned veterans in obtaining employment and training in automotive maintenance. Available to automotive vehicle and parts firms. Automotive Council for War Production, New Center Bldg., Detroit, Mich.

Wagner Products. 16-p. folder describing electrical and automotive products with text and pictures. Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.

Dillon Dynamometer. 19-p. book with pictures and text composing a "complete presentation in manual form of the story of the traction type dynamometer and the constantly increasing number of uses which are being found for it in simplifying testing and weighing procedures in practically every industry." W. C. Dillon & Co., Inc., 5410 W. Harrison St., Chicago 44, Ill.

Properties of Ameripol D. 7-p.; pictures and text describing in detail the product, an oil and heat resistant synthetic rubber; also tables giving property relation of natural and various types of synthetic rubber. Public relations department, B. F. Goodrich Co., Akron, Ohio.

Cork. 14-p., leaflet size book with text compiled by L. L. Westling answering questions concerning cork as an insulator. Pictures. Cork Insulation Manufacturers Assn., 25 W. 43rd St., New York 18.

Eastern Stainless Steel Sheets. 96-p. handbook with pictorial review of importance of stainless steel in various industries; 4-p. "turn-out" spread giving complete details on properties of Eastern Stainless steels, and informative section entitled "Why Stainless Steel Resists Corrosion." Eastern Stainless Steel Corp., Baltimore 1, Md.

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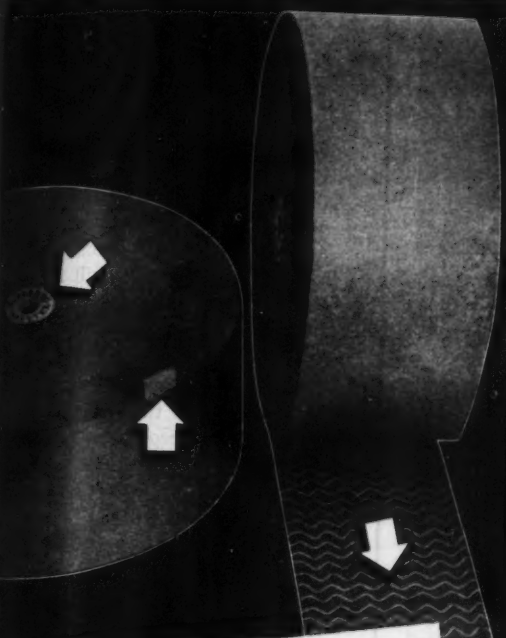
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Here Today!



LONG-TERM ECONOMY from the PLUS features of SERVICE MOTOWLIFT

LOWER operating and maintenance cost for a longer time is just one of the positive advantages you get with the new Service MOTOWLIFT. These better-built fork-lift trucks have many superior features that you can't afford to ignore. Powered by the efficient and economical Ford 4-cylinder tractor engine, the Motowlift has a heavier, all-welded steel frame; 8-roller carriage in the hydraulic lift assembly; anti-leak, straight-line-thrust tilt cylinders; plus other advanced construction features which assure long term economy. Before you buy any lift truck, see how the MOTOWLIFT saves time and money on material handling. Ask your Service Distributor for a demonstration.

- Gas Powered for 24-hour-a-day service by the famous 4-cylinder Ford tractor Engine.
- Wide Range of Models for handling various loads and lift heights.
- Highly Maneuverable — Short (60") Outside turning radius.
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*Prompt
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Your MOTOWLIFT is ready now to save you time and money. See your Service Distributor or write us today.

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Eastern Factory: 437 Somerville Ave., Somerville, Mass. Toronto, Canada: United Steel Corp., Ltd., SC&T Co. Div.

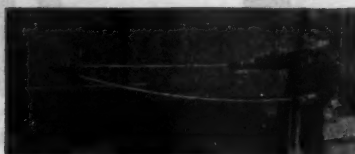
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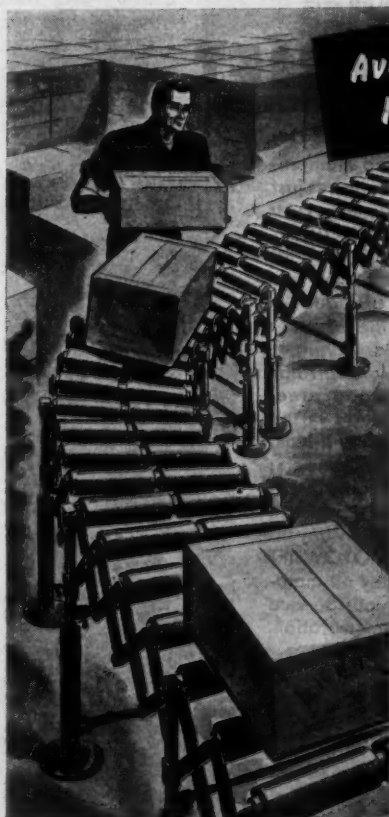
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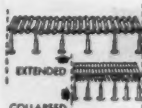
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Roller design keeps
box on conveyor
regardless of curves.



FOOD MACHINERY CORPORATION

Riverside Division: Riverside, California

Traffic Management

(Continued from page 96)

group, who will use it for selfish interests.

A national organization will do much to raise the position of the traffic manager. However, this will not do enough. There must be steady and unrelenting perseverance to obtain legislation within the various states which will recognize and regulate the profession of traffic management by statute.

The reason that the Certified Public Accountant has attained the high standard that he has is because the accountants obtained legislative recognition. A national organization, conferring high sounding titles, will not, alone, offer real protection to the public and its members of the profession, unless it has obtained legislative recognition.

If traffic managers in every state believe that their profession is worthy of professional recognition, the kind of recognition that makes it impossible for bookkeepers to add the C.P.A. designation after their names until they have met the requirements and been duly certified as public accountants, and that will make it impossible for shipping clerks or freight solicitors to add C.T.M., or Certified Traffic Manager, after their names until they have met the requirements, they must, of necessity, support a state legislative recognition program. The extent and nature of these programs will differ from state to state but it is the responsibility of local traffic men's associations.

Specific Proposals

We now come to a delicate point in this discussion of the professionalization of traffic management. If professional status is to be brought about, it will be necessary for someone or some group to suggest what the professional standards should be. No one has yet done this with any exactness. It is suggested that this is the duty of the National Industrial Traffic League. We, however, suggest the following basic standards or requirements for a Certified Traffic Manager for those who have been

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engaged in traffic management less than 10 years.
1. Seven years' experience and training under a traffic manager who has from 10 to 15 years' experience; or graduation from a university or college with a major in transportation and three years' experience under a similarly qualified traffic manager. This gives the necessary background of experience or education plus experience, and, presumably, equalizes the opportunities for college and non-college applicants.

2. Passing of a comprehensive examination or set of examinations, to be administered by the National Industrial Traffic League or whatever organization may be set up, and of at least the standard used by other groups such as Certified Public Accountants.

3. Admittance to practice before the Interstate Commerce Commission.

4. These suggestions do not take care of those who have been engaged in traffic management work for 10 years or more. For these, it is thought that previous admittance to practice before the Interstate Commerce Commission plus at least 10 years in a responsible traffic position should entitle them to become Certified Traffic Managers. For those who have not been admitted to practice but still have the years of experience, admittance, sponsored by three members of the governing board of the National Industrial Traffic League, should be sufficient.

Public Protection

As F. A. Keeling so ably summarized the situation in *D and W* in Nov., 1939, "Non-support of the idea of professionalization for traffic managers is holding back: (1) Protection to the public or business executives who are at present unable to determine the fitness of an applicant for a traffic manager's position. (2) Protection to traffic managers themselves for as long as shipping clerks can call themselves traffic managers the standard of the profession will not be raised and some real traffic managers will continue to receive little better than shipping clerks salaries."

Streamlined Handling

(Continued from page 58)

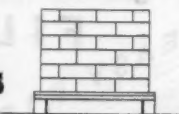
Cargo destined for faraway ports is placed fore or aft in the ship, and that likely to be unloaded first is placed near the center. Main weight is at all times concentrated amidships.

As soon as the plane arrives at an intermediate station, the transport officer there can tell by merely glancing at the standardized forms and manifests what the total weight off and weight through will be, as well as the compartment weight reduction. He is able to calculate rapidly the loads allowable to the next station, and the plane's balance when intermediate loads have been removed.

Delays are minimized in placement of local loads, and unloading crews at these stations can promptly locate the freight consigned to them. Through freight of high priority, meanwhile, is put through on one line to its final destination.

They Go TOGETHER

UNIT
LOADS



BATTERY
TRUCKS



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BATTERIES



... for fast, safe, efficient and dependable material handling ... any time, and place ... at low cost.

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NEW, HEAVY DUTY PLASTIC FLOOR PATCH *Sets Instantly*



**REPAIRS
BROKEN CONCRETE
without
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FREE TRIAL OFFER

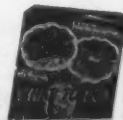
No longer is it necessary to close off an area of concrete floor while waiting for newly installed patches to set . . . thanks to INSTANT-USE, a new plastic repair material by Flexrock. Here's the most revolutionary improvement in floor resurfacers to come along in years. The material comes ready mixed and is ready for traffic almost the moment it's put down. It's just the thing for busy shipping floors, platforms, concrete steps, etc.

TAMP SMOOTH! TRUCK OVER!

There is no waiting. Simply shovel INSTANT-USE into the hole or rut—tamp—and your floor is restored to solid smoothness . . . back in service without delay. Tough INSTANT-USE bonds tight to old concrete, makes long-lasting heavy duty patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.



Request Descriptive Folder . . . and Details of FREE TRIAL OFFER



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3687 Filbert St., Phila. 4, Pa.

Please send me complete INSTANT-USE information . . . details of FREE TRIAL OFFER — no obligation.

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Company

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"JIFFY" ALL PURPOSE HAND TRUCKS

**SPEED UP
HANDLING**

- BOXES
- CRATES
- BAGS
- BARRELS
- CARTONS

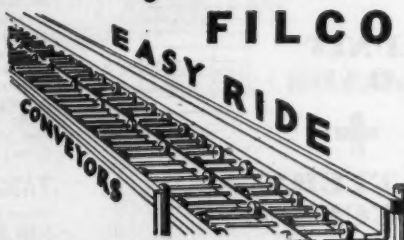
Sturdy, easy rolling, well balanced Jiffy Trucks save time, money and manpower. Load capacities up to 900 pounds. Ideal for delivery trucks, warehouses, docks, wharves, terminals, airports or any material handling problem. Fleet purchases add extra savings.

Send for complete details on the full line of Jiffy Trucks

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Cut Handling Costs

Eliminate wasteful movement and save vital floor space. This modern gravity conveyor is both portable and adjustable. Reversible curves; right or left, for any angle or "S" curves can be supplied. Immediate delivery of standard units.



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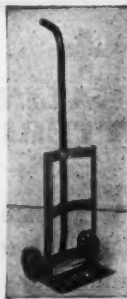
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ALL STEEL HAND TRUCKS

Light—Durable—Quiet Running

Furnished with either rubber or steel wheels.

Write for prices and complete details.



"Handy"

SCHMIDGALL MANUFACTURING COMPANY

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"Over 30 years dependable service"

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Motaircargo

(Continued from page 37)

tunities open to its members are located at the airports selected for Cargair facilities.

Much uncertainty exists at present regarding the probable role of contract carrying in the air. Motor truck experience has shown that contract carriers play a very minor role in the movement of general freight but that they occupy a strong position in certain of the special commodity traffic fields. Special commodities, however, seem to offer little attraction either to the large or small airlines at present because most of such traffic requires a good deal more than just transportation.

In other words, it requires special types of equipment, special services and most of it is slow haul and very low value per unit of weight and bulk. Most air traffic also moves store-door to store-door without any change which would be impossible even in the best coordinated motaircargo service.

The conclusion is justified, therefore, that the prospects for important contract carrier development in air transportation are not very promising at this time. However, there are possibilities in transporting some of the more valuable perishable agricultural specialties and highly perishable animal products under contracts. Some traffic in other perishables, such as newspapers and magazines, fashion goods, etc., may be developed also on a contract basis.

The motor freight industry has proven itself during the war years as the vital connecting link between many shippers and receivers. It is the most logical means of transportation for coordination with the air cargo activities and only of the common carrier scheduled airlines but also for other carriers by air. The speed of transportation can only be capitalized on if there are fast-moving units between airports, off-line points and ultimate destinations. Moreover, the airline network is present far from complete.

Airline Warehousing

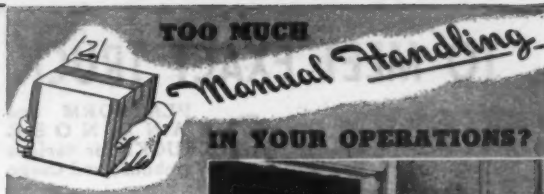
(Continued from page 62)

a tailor-made service. Starting field warehousing operation to protect a loan made on spare plane parts will not be a complicated process either for the airline or the bankers concerned.

Warehouse receipts for a spare parts stock in a field warehouse set up at an airline's maintenance base represents products which have become segregated assets just as surely as if they had been placed in a public warehouse building. Such goods are no longer merged with the general inventory of the airline, but are separate and segregated from all other assets under the control of a disinterested party whose duties and responsibilities are distinctly defined and understood by all concerned. Such warehoused goods are not liable for the debts of their owner; they may not be attached, except for storage charges of the warehouseman; and they may be specifically insured.

Capital invested in an inventory of spare parts, therefore, is not tied up, since the goods become liquid assets and available for use as collateral as soon as they go under the control of the field warehouseman. However, if these same parts are stored in a private store-room at the airline base or in a privately operated warehouse elsewhere, their collateral value amounts to nothing. In order to become liquid assets the stocks of parts must be removed from the possession of the airline and placed under the custody of a bona fide warehouseman.

When loans are made on the security of a segregated stock of spare parts, the bank controls them every minute. The borrower cannot withdraw any part of them without an order from the bank to the agent in charge of the field warehouse in which they are stored. Before issuing such an order a bank may demand that other parts delivered to the warehouseman make good on the withdrawals (in value), or that payment be made on the loan. The lender always has a tangible lot of parts as collateral for his loan.



Handle Packages ... Cases ... Cartons Faster and Cheaper with STANDARD Wheel Conveyors

Low in cost, flexible, lightweight, easily set up inside or outside the plant, Standard Wheel Conveyors solve many a handling problem. More than pay for themselves in time and money saved loading or unloading trucks or carloads of packages—cases—cartons. Write for bulletin DW-105 showing



wide range of application of Standard 3 Row Wheel Conveyors.

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minn.

KRANE KAR HANDLES RAILROAD AND AIR FREIGHT



Faster

Handle the load ONCE! KRANE KAR picks up, transports, and positions the load to and from Cargo Plane or RR Car. You don't waste time maneuvering the vehicle . . . just operate the "live" boom up and down or from side to side, by power, with full load on hook. Stable without jacks or outriggers; automatic braking of boom and load. Simple and safe to operate. Send for Catalog #58.

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Agents
in
Principal
Cities



THE ORIGINAL SWING BOOM MOBILE CRANE
WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER

2½, 5, AND 10 TON CAPACITIES

KRANE KAR

SILENT HOIST & CRANE CO., 857 63rd ST., BKLYN 20, N.Y.

TO MEET EXACT TRUCK NEEDS



Q5 Trucks with round corners, no projecting parts.

PLATFORM and HAND NOSE TRUCKS for various Warehouse and Cargo use.

Write for details and prices.



ORANGEVILLE MFG. CO.
Orangeville (Col. Co.), Pa.



Fig. 292-4
A popular Warehouse Truck

WAREHOUSE SUPPLIES

Complete line of Warehouse Supplies:—Carrying Straps,—Furniture Covers and Pads,—Auto Covers,—Special Packing Materials,—Glassine Paper,—Moth-proof Bags and Tar Paper,—Corrugated Floor Runners,—Moving Equipment,—Scratch Removers,—Jackets and Aprons,—and many other hard-to-get warehouse materials.



Also new complete lines of:—Moth Killer Products,—Rodent Exterminators,—Insecticides,—Sanitary Chemicals.

Write for illustrated price catalog today!

ELKAY PRODUCTS CO. 323-27 West 16th St.
New York 11, N. Y.

Let No Truck Waste Time Now!



Here's the Little Device That Helps You Get More Work Out of YOUR MOTOR TRUCKS

Trucks are getting scarce; a truck's time is getting to be a precious and an important thing to the country. The Servis Recorder has only one purpose: to help you keep your trucks busy and efficient. Use it—for victory. Write for booklet: "Ten Ways of Getting More Work out of Motor Trucks." **THE SERVICE RECORDER CO.,** 1375 Euclid Avenue, Cleveland, Ohio.

The Servis Recorder

Tells Every Move Your Truck Makes

POSITION WANTED

Traffic man, traffic school, college graduate; five years industrial carrier experience, all phases; ICC practitioner, excellent references.

Box W-405, DISTRIBUTION AGE
100 East 42nd St., New York 17

POSITION WANTED

Traffic manager or assistant; 25 years' experience with large railroad in traffic department general offices in New York City. Mature; good health; young ideas. New York or vicinity preferred.

Box V-394, DISTRIBUTION AGE
100 East 42nd St., New York 17

Motair Design

(Continued from page 43)

being able to ship three times as much merchandise in the same carton.

In addition, since the weight of the holding fixtures represents only 55 percent of that of the eliminated hatboxes, the weight of the empty container was reduced considerably. This weight reduction increased the payload of each container.

All business men should remember that often a five percent reduction in distribution costs will increase profits more than a 10 percent increase in sales.

Any manufacturer, by calculating the part of the cost of distribution which he pays, can approximate the profits he would gain if he could bring about efficiencies and economies in his individual system of distribution. Naturally, part of these profits would be turned back to the consumer in the form of lower prices. This would bring us one step nearer to our goal of "more things for more people."

Distribution costs must be cut and they can be cut. Transportation, the basic phase of distribution, should be the first phase to be made more economical and more efficient. Motaircargo, the new phase of transportation, may well serve as a model of effectiveness upon which we can pattern our entire economy of distribution to insure the preservation of the American system of free enterprise.

Higgins Plans Shipyard

Plans of Andrew Higgins to construct a \$50,000,000 shipyard and drydock in Los Angeles were disclosed recently by Wade B. Miller, President, Aircraft Tool Inc., a Higgins associate. The yard will turn out plastic-plywood fishing vessels and pleasure cruisers (Herr)

Caribbean Air Route

Aero Transport Corp., Tampa, will shortly inaugurate service for non-scheduled air cargo throughout the Caribbean area. Founder of the new company is W. B. Haggerty.

Keep Motor Trucks Rolling

(Continued from page 78)

operating between two terminals, but one day had an accident which found him 82 miles off his regular route.

In one widely used system, truck units go through regular maintenance periods: refueling every day; greased every 500 miles; inspected every 1000 miles, and other maintenance routines followed to keep trucks rolling. Yet only four printed forms are used and only two men required (in addition to regular shop maintenance men) one man to dispense fuel and another to keep shop inventory.

Control Board

Equipment failures should not be lightly regarded as an inevitable consequence of use. When they occur, they should be regarded as a sign that management has neglected to set up proper controls. An effective aid in maintenance control has been found in the use of a visual maintenance control board, located usually on the wall of the shop. This board may be 15 ft. long and three to six feet high. In a column at extreme left are pockets, each containing cards, one card for each truck or other piece of equipment. At the top of each card is name, description of equipment and identifying number, so placed that when cards are in their pockets, this information is always visible.

Below this information on the card is given an historical record of the equipment—date of purchase, accidents, repairs, and other details. To the right of this column, on the board, is a series of columns marked off in squares and each square holed to accommodate a $\frac{1}{2}$ in. peg. These columns carry headings, such as "500 M." "1000 M." etc., indicating mileage run, up to 20,000 miles. Different colored or different shaped pegs are inserted into these holes to denote the type of service given or the status of the truck. For example, a red signal peg with "down" marked on it, is inserted when the truck is "idle" at that particular mileage. A blue signal

peg indicates "motor change." A pink signal peg shows "tire-trouble," etc.

When the truck has travelled 20,000 miles, clear across the board, as represented by the headings of the columns, the same truck is started over at the left of the board with a square-shouldered peg marked "2" indicating the truck is now on its second lap of 20,000 miles. Different colored pegs, or different sized pegs show the different inspections, repairs, services, given.

In an organization operating hundreds of such trucks, a number of such boards would be necessary. Each will show at a glance, without search in files, actual mileage run by each truck, time when each unit is due for inspection or servicing of various kinds, whether such service has been rendered, and just where each truck is: down, awaiting repair, under repairs, available for service, or actually in service. Much time and effort are saved by such routine control boards, according to trucking companies which have adopted them. These boards can be stepped up to provide more frequent inspection or servicing.

Productive maintenance can be made more effective by placing maintenance men and drivers on wage incentive systems. Preventive maintenance on the road and in the shop seeks to get the most out of equipment, while wage incentive plans seek to increase efficiency of employees. The correct incentive plan, when applied, encourages the elimination on needless repairs, and expedites those that are necessary. It also promotes foresight and promptness in detecting the preventing road failures.

Incentive Plans

Group incentive plans are preferred generally to individual incentives for shop maintenance employees, since good performance requires, in most cases, group co-operation. Moreover, many maintenance jobs, by their very nature, cannot be standardized as to hours by applying time study. Therefore, other standards must be set up on which to base the incentive payment system. Here, careful engineering analysis must be applied to find standards that will be equitable for all concerned and attainable without undue effort by employees.

Transportation Allies

(Continued from page 60)

acres, 450 are in service for land plane operations. There are three runways: one 6,000 by 200 ft., another 5,500 by 200 ft., the third 4,500 by 200 ft. Of the eight hangars, four are leased to the War Department, comprising 170,000 cu. ft. Of the remaining four, TWA has one of 50,000 cu. ft.; United Airlines one of 3,000,000 cu. ft.; U. S. Coast Guard owns one of 1,200,000 cu. ft., and the U. S. Navy one of 4,600,000 cu. ft., the last used by Pan-American and shortly to revert to the city. The airlines handling freight out of the airport are TWA, United, Pan-American and Western. American will make

a fifth if CAB grants the franchise it has asked for to extend operations from Los Angeles to San Francisco.

Because the Airport is 13 miles, 30 minutes by automobile or truck, from the business center of San Francisco, most shippers believe that improvement of the existing field is more practical, to start with, than the immediate expenditure of large sums on a new airport (such as the one proposed for the Berkeley side of San Francisco Bay, which is by no means an abandoned project but regarded as due to come later as the region's air business grows.)

Public Warehouse Section

Warehousing is an integral part of distribution in several ways. Public warehouses are not merely depositories for the safeguarding of personal effects or industrial commodities; many are equipped to perform a wide range of services in addition to storage. Among these services are:

Bottling, boxing, financing, fumigating, grading, handling, hauling, labeling, motor transportation, mothproofing, moving, operation of public truck scales, quick-freeze facilities, rental of space for manufactur-

ing, offices and showrooms, rigging, sales representation, sample distribution, sorting, stevedoring and various other functions for efficient and economical distribution.

This special advertising section of public warehousing has been consolidated for ready reference and maximum utility. It includes merchandise, refrigerated, household goods and field warehouses. For shippers' convenience, states, cities and firms have been arranged alphabetically.

BIRMINGHAM, ALA.

1880—Sixty-five Years of Service—1945

HARRIS TRANSFER & WAREHOUSE CO.

8 South 13th St., Birmingham 1

— FIREPROOF WAREHOUSES —

Merchandise and Household Goods

• STORAGE • CARTAGE • DISTRIBUTION • FORWARDING
Pool Cars Handled

Member of A.C.W.—A.W.A.—N.F.W.A. Agents for Allied Van Lines, Inc.

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General Merchandise Storage and Distribution
Pool Car Service a Specialty—Motor Truck Service
Centrally Located—Free Switching from All R.R.s.

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Fireproof Warehouse
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SERVING
S.E. Alabama
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POOL CAR DISTRIBUTION
Receiving—STORAGE—Handling.
Motor Freight Service to all points.
Over Private Siding. Reciprocal Switching.
Efficient—Conscientious Branch House Service.

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HEAVY HAULING—STORAGE

Pool Cars and General Merchandise—Bonded
Authorized Transfer Agents
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MONTGOMERY, ALA.



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PINE BLUFF, ARK.

Gathright Van & Transit Company

ON ST. L. SW. RY. AND MO. PAC. RY.

Merchandise and Household Goods Storage
Pool Car Distribution

Member: Ark.M.C.A. and Mo.W.A.
300-308 Pine Street



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OPERATING WAREHOUSES
IN PRINCIPAL CALIFORNIA CITIES

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